

# MDS-JB980

## SERVICE MANUAL



AEP Model  
UK Model

Ver. 1.2 2006.12



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Model Name Using Similar Mechanism	MDS-JE780
MD Mechanism Type	MDM-7S1A
Optical Pick-up Type	KMS-260B/260E

### SPECIFICATIONS

System	MiniDisc digital audio system
Disc	MiniDisc
Laser	Semiconductor laser ( $\lambda = 780 \text{ nm}$ )
Laser output	Emission duration: continuous MAX 44.6 $\mu\text{W}^1$ )
1) This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with 7 mm aperture.	
Laser diode	Material: GaAlAs
Revolutions (CLV)	400 rpm to 900 rpm
Error correction	ACIRC (Advanced Cross Interleave Reed Solomon Code)
Sampling frequency	44.1 kHz
Coding	ATRAC (Adaptive Transform Acoustic Coding)/ATRAC 3
Modulation system	EFM (Eight-to-Fourteen Modulation)
Number of channels	2 stereo channels
Frequency response	5 to 20,000 Hz $\pm 0.3 \text{ dB}$
Signal-to-noise ratio	Over 100 dB during play
Wow and flutter	Below measurable limit

#### Inputs

ANALOG IN	Jack type: phono Impedance: 47 kilohms Rated input: 500 mVrms Minimum input: 125 mVrms
DIGITAL OPTICAL IN	Connector type: square optical Impedance: 660 nm (optical wave length)
DIGITAL COAXIAL IN	Jack type: phono Impedance: 75 ohms Rated input: 0.5 Vp-p, $\pm 20\%$

#### Outputs

PHONES	Jack type: stereo phone Rated output: 28 mW Load impedance: 32 ohms
ANALOG OUT	Jack type: phono Rated output: 2 Vrms (at 50 kilohms) Load impedance: over 10 kilohms
DIGITAL OPTICAL OUT	Connector type: square optical Rated output: -18 dBm Load impedance: 660 nm (optical wave length)

#### General

Power requirements	230 V AC, 50/60 Hz
Power consumption	15 W (0.45 W in standby mode)
Dimensions (approx.)	430 $\times$ 111 $\times$ 286 mm (w/h/d) incl. projecting parts and controls
Mass (approx.)	4.5 kg

#### Supplied accessories

Audio connecting cords (2)
Optical cable (1)
OpenMG Jukebox CD-ROM (1)
Operating instructions for OpenMG Jukebox (1)
Remote commander (remote) (1)
R6 (size-AA) batteries (2)
USB cable (1)

*Design and specifications are subject to change without notice.*

## MINIDISC DECK

9-874-080-03

2006L04-1

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**Sony Corporation**

Home Audio Division

Published by Sony Techno Create Corporation

# SONY®

**CAUTION**

Danger of explosion if battery is incorrectly replaced.  
 Replace only with the same or equivalent type recommended by the manufacturer.  
 Discard used batteries according to the manufacturer's instructions.

**NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT**

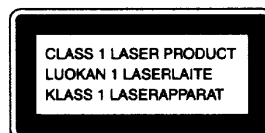
The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

**NOTES ON LASER DIODE EMISSION CHECK**

Never look into the laser diode emission from right above when checking it for adjustment. It is feared that you will lose your sight.

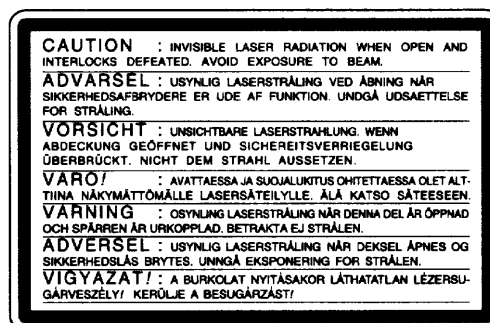
Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.



This appliance is classified as a **CLASS 1 LASER** product.

This label is located on the rear exterior.

The following caution label is located inside the apparatus.

**CAUTION**

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

**Notes on chip component replacement**

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

**Flexible Circuit Board Repairing**

- Keep the temperature of soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

**SAFETY-RELATED COMPONENT WARNING!!**

COMPONENTS IDENTIFIED BY MARK  $\triangle$  OR DOTTED LINE WITH MARK  $\triangle$  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

## SELF-DIAGNOSIS FUNCTION

The self-diagnosis function consists of error codes for customers which are displayed automatically when errors occur, and error codes which show the error history in the test mode during servicing. For details on how to view error codes for the customer, refer to the following box in the instruction manual. For details on how to check error codes during servicing, refer to the following “Procedure for using the Self-Diagnosis Function (Error History Display Mode)”.

### Self-diagnosis function

The deck's self-diagnosis function automatically checks the condition of the MD deck when an error occurs, then issues a three- or five-digit code and an error message on the display. If the code and message alternate, find them in the following table and perform the indicated countermeasure. Should the problem persist, consult your nearest Sony dealer.

Three- or five-digit code/ Message	Cause/Remedy
C11/Protected	The inserted MD is record-protected. ➔ Take out the MD and close the record-protect slot.
C12/Cannot Copy	You tried to record a CD with a format that the external device connected to the deck does not support, such as CD-ROM or video CD. ➔ Remove the disc and insert a music CD.
C13/REC Error	The recording was not made properly. ➔ Set the deck in a stable surface, and repeat the recording procedure.
	The inserted MD is dirty (with smudges, fingerprints, etc.), scratched, or substandard in quality. ➔ Replace the disc and repeat the recording procedure.
C13/Read Error	The deck could not read the TOC on the MD properly. ➔ Take out the MD and insert it again.

Three- or five-digit code/ Message	Cause/Remedy
C14/Toc Error	The deck could not read the TOC on the MD properly. ➔ Insert another disc. ➔ If possible, erase all the tracks on the MD.
C41/Cannot Copy	The sound source is a copy of commercially available music software, or you tried to record a CD-R (Recordable CD). ➔ The Serial Copy Management System prevents making a digital copy. You cannot record a CD-R.
C71/Din Unlock	The sporadic appearance of this message is caused by the digital signal being recorded. This will not affect the recording.
	While recording from a digital component, the digital connecting cable may have been incompletely connected and come loose or the digital component was turned off. ➔ Check the connection or turn the digital component back on.
E0001/ MEMORY NG	There is an error in the internal data that the deck needs in order to operate. ➔ Consult your nearest Sony dealer.
E0101/ LASER NG	There is a problem with the optical pickup. ➔ The optical pick-up may have failed. Consult your nearest Sony dealer.
E0201/ LOADING NG	There is a problem with the loading. ➔ The loading may have failed. Consult your nearest Sony dealer.

### Procedure for using the Self-Diagnosis Function (Error History Display Mode).

**Note:** Perform the self-diagnosis function in the “error history display mode” in the test mode. The following describes the least required procedure. Be careful not to enter other modes by mistake. If you set other modes accidentally, press the **MENU/NO** button to exit the mode.

- While pressing the **⏮⏪AMS⏩⏭** knob and **■** button, connect the power plug to the outlet, and release the **⏮⏪AMS⏩⏭** knob and **■** button.  
When the test mode is set, “[Check]” will be displayed.
- Rotate the **⏮⏪AMS⏩⏭** knob and when “[Service]” is displayed, press the **YES** button.
- Rotate the **⏮⏪AMS⏩⏭** knob and display “Err Display”.
- Pressing the **YES** button sets the error history mode and displays “op rec tm”.
- Select the contents to be displayed or executed using the **⏮⏪AMS⏩⏭** knob.
- Pressing the **⏮⏪AMS⏩⏭** knob will display or execute the contents selected.
- Pressing the **⏮⏪AMS⏩⏭** knob another time returns to step 4.
- Pressing the **MENU/NO** button displays “Err Display” and exits the error history mode.
- To exit the test mode, press the **REPEAT** button. The unit sets into the STANDBY state, the disc is ejected, and the test mode ends.

## ITEMS OF ERROR HISTORY MODE ITEMS AND CONTENTS

## Selecting the Test Mode







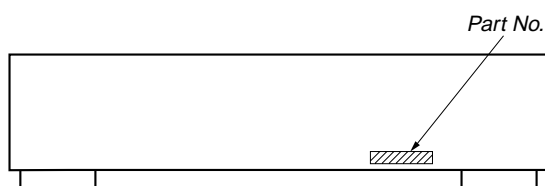
Display	History
op rec tm	Displays the total recording time. When the total recording time is more than 1 minute, displays the hour and minute When less than 1 minute, displays "Under 1 min" The display time is the time the laser is set to high power, which is about 1/4 of the actual recording time.
op play tm	Displays the total playback time. When the total playback time is more than 1 minute, displays the hour and minute When less than 1 minute, displays "Under 1 min"
spdl rp tm	Displays the total rotating time of the spindle motor. When the total rotating time is more than 1 minute, displays the hour and minute When less than 1 minute, displays "Under 1 min"
retry err	Displays the total number of retry errors during recording and playback Displays "r xx p yy". xx is the number of errors during recording. yy is the number of errors during playback. This is displayed in hexadecimal from 00 to FF.
total err	Displays the total number of errors Displays "total xx". This is displayed in hexadecimal from 00 to FF.
err history	Displays the past ten errors. Displays "0x ErrCd@@". X is the history number. The younger the number, the more recent is the history (00 is the latest). @@ is the error code. Select the error history number using the  knob.
retry adrs	Displays the past five retry addresses. Displays "xx ADRS yyyy", xx is the history number, yyyy is the cluster with the retry error. Select the error history number using the  knob.
er refresh	Mode for erasing the error and retry address histories Procedure 1. Press the  knob when displayed as "er refresh". 2. Press the <b>YES</b> button when the display changes to "er refresh?". When "complete!" is displayed, it means erasure has completed. Be sure to check the following after executing this mode. *Data has been erased. *Perform recording and playback, and check that the mechanism is normal.
tm refresh	Mode for erasing the total time of recording and playback Procedure 1. Press the  knob when displayed as "tm refresh". 2. Press the <b>YES</b> button when the display changes to "tm refresh?". When "complete!" is displayed, it means erasure has completed.
op change	Mode for erasing the total time of op rec tm, op play tm. These histories are based on the time of replacement of the optical pickup. If the optical pick-up has been replaced, perform this procedure and erase the history. Procedure 1. Press the  knob when displayed as "op change". 2. Press the <b>YES</b> button when the display changes to "op chang?". When "Complete!" is displayed, it means erasure has completed.
spdl change	Mode for erasing the total spdl rp tm time These histories are based on the time of replacement of the spindle motor. If the spindle motor has been replaced, perform this procedure and erase the history. Procedure 1. Press the  knob when displayed as "spdl change" 2. Press the <b>YES</b> button when the display changes to "spdl chang?" When "Complete!" is displayed, it means erasure has completed.

Table of Error Codes

Error Code	Description
10	Could not load
12	Loading switches combined incorrectly
20	Timed out without reading the top of PTOC
21	Could read top of PTOC, but detected error
22	Timed out without accessing UTOC
23	Timed out without reading UTOC
24	Error in UTOC
30	Could not start playback
31	Error in sector
40	Retry cause generated during normal recording
41	Retried in DRAM overflow
42	Retry occurred during TOC writing
43	Retry aborted during S.F editing
50	Other than access processing, and could not read address.
51	Focus NG occurred and overran.

**MODEL IDENTIFICATION**

— BACK PANEL —



MODEL	PARTS No.
AEP models	4-239-218-0□
UK model	4-239-218-1□

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## SECTION 1 SERVICING NOTES

### JIG FOR CHECKING BD BOARD WAVEFORM

The special jig (J-2501-196-A) is useful for checking the waveform of the BD board. The names of terminals and the checking items to be performed are shown as follows.

GND : Ground

I+3V : For measuring Iop (Check the deterioration of the optical pick-up laser)

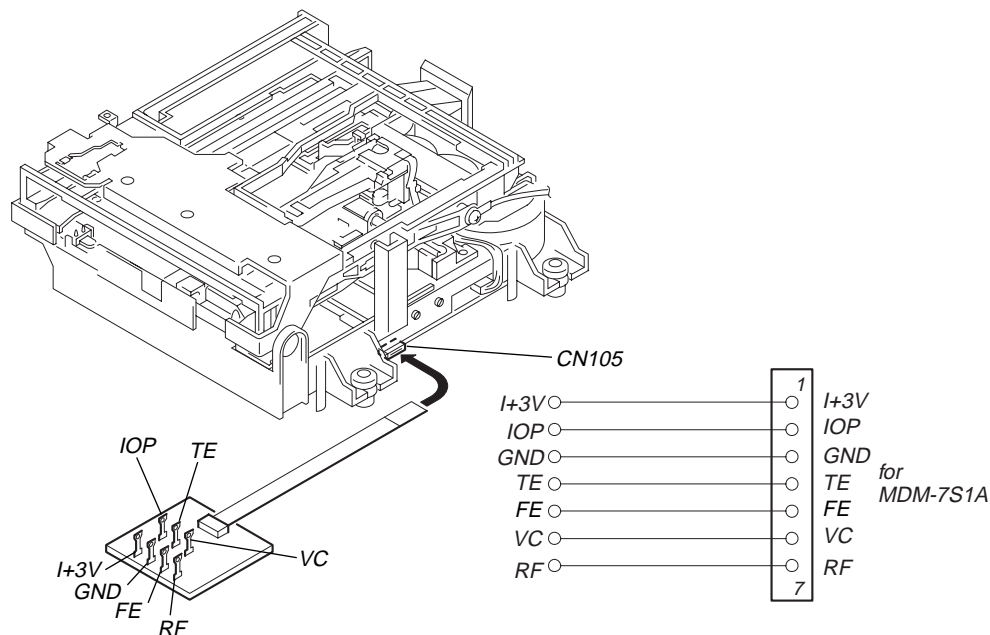
Iop : For measuring Iop (Check the deterioration of the optical pick-up laser)

TE : TRK error signal (Traverse adjustment)

VC : Reference level for checking the signal

RF : RF signal (Check jitter)

FE : Focus error signal



### Iop DATA RECORDING AND DISPLAY WHEN OPTICAL PICK-UP IS REPLACED

The Iop value labeled on the optical pick-up can be recorded in the non-volatile memory. By recording the value, it will eliminate the need to look at the value on the label of the optical pick-up. When replacing the optical pick-up, record the Iop value on the optical pick-up according to the following procedure.

#### Record Procedure:

1. While pressing the ◀◀AMS▶▶ knob and ■ button, connect the power plug to the outlet, and release the ◀◀AMS▶▶ knob and ■ button.
2. Rotate the ◀◀AMS▶▶ knob to display “[Service]”, and press the YES button.
3. Rotate the ◀◀AMS▶▶ knob to display “Iop Write” (C05), and press the YES button.
4. The display becomes “Ref=@ @ @ .@” (@ is an arbitrary number) and the numbers which can be changed will blink.
5. Input the Iop value written on the optical pick-up.  
To select the number : Rotate the ◀◀AMS▶▶ knob.  
To select the digit : Press the ◀◀AMS▶▶ knob.
6. When the YES button is pressed, the display becomes “Measu=@ @ @ .@” (@ is an arbitrary number).
7. As the adjustment results are recorded for the 6 value. Leave it as it is and press the YES button.
8. “Complete!” will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become “Iop Write”.
9. Press the REPEAT button to complete.

#### Display Procedure:

1. While pressing the ◀◀AMS▶▶ knob and ■ button, connect the power plug to the outlet, and release the ◀◀AMS▶▶ knob and ■ button.
2. Rotate the ◀◀AMS▶▶ knob to display “[Service]”, and press the YES button.
3. Rotate the ◀◀AMS▶▶ knob to display “Iop Read” (C26).
4. “@ @ .@ / ## .#” is displayed and the recorded contents are displayed.  
@ @ .@ : indicates the Iop value labeled on the optical pick-up.  
## .# : indicates the Iop value after adjustment
5. To end, press the ◀◀AMS▶▶ button or MENU/NO button to display “Iop Read”. Then press the REPEAT button.

## OPTICAL PICK-UP BLOCK TYPE DISCRIMINATION

There are two types of the optical pick-up block in this model.

These are compatible except for the laser power.

Check the type of the optical pick-up block before replacement.

Adjust following items after replacing the optical pick-up block.

- 5-6-2. Laser Power Check (See page 26)
- 5-10. LASER POWER ADJUSTMENT (See page 29)

### Differences

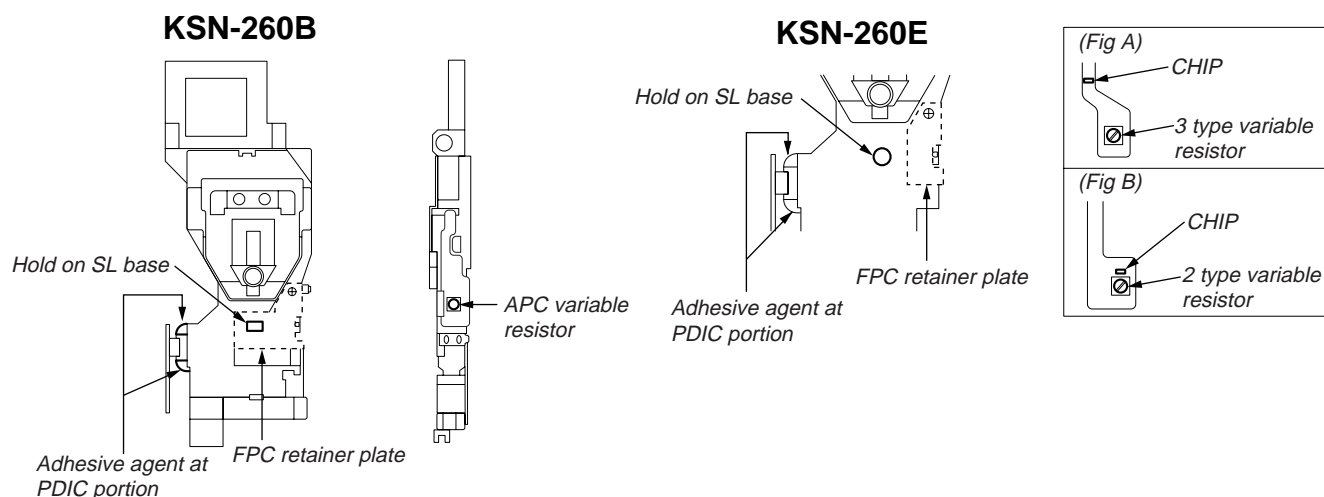
	KMS-260B	KMS-260E
Color of the adhesive agent at PDIC portion	Pink	White
Form of FPC retainer plate	Close the hole on SL base	Not close the hole on SL base
APC variable resistor	Small volume (2 type)	Big variable resistor (3 type) and chip resistor (Fig. A)
		Small variable resistor (2 type) and chip resistor (Fig. B)

Fig. B type is for repair.

- Abbreviation

260B: KMS-260B model

260E: KMS-260E model



### • CLEANING THE OPTICAL PICK-UP

**Note 1:** In cleaning the lens, do not apply an excessive force

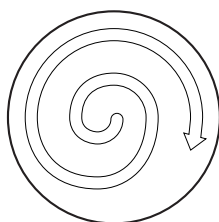
As the optical pick-up is vulnerable, application of excessive force could damage the lens holder.

**Note 2:** In cleaning, do not use a cleaner other than exclusive cleaning liquid. (KK-91 or isopropyl alcohol)

**Note 3:** Wipe the objective lens spirally from center toward outside. (See Figure A)

**Note 4:** Eject the disc, if loaded.

**Note 5:** Disconnect the power cord from the socket to shut off the power supply.



(Figure A)

CHECKS PRIOR TO PARTS REPLACEMENT AND ADJUSTMENTS

Before performing repairs, perform the following checks to determine the faulty locations up to a certain extent. Details of the procedures are described in “5 Electrical Adjustments”.

- 5-6-2. Laser power check (see page 26)
- 5-6-3. Iop Compare (see page 26)
- 5-6-4. Auto Check (see page 27)

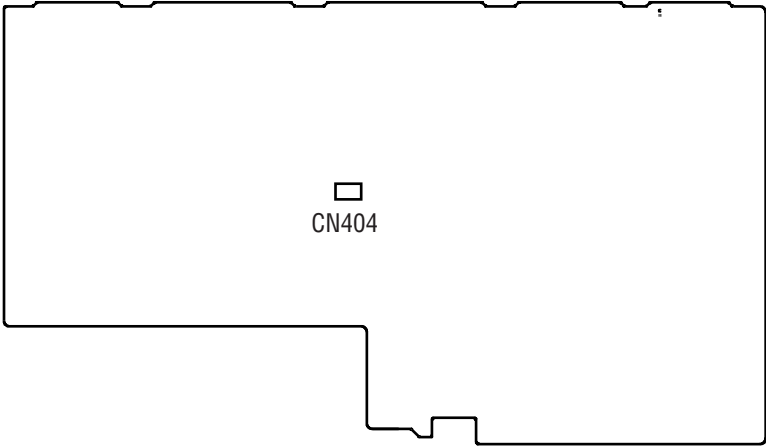
**Note:**  
The criteria for determination above is intended merely to determine if satisfactory or not, and does not serve as the specified value for adjustments.  
When performing adjustments, use the specified values for adjustments.

FORCED RESET

The system microprocessor can be reset in the following procedure.  
Use these procedure when the unit cannot be operated normally due to the overrunning of the microprocessor, etc.

**Procedure :**  
Remove the short-pin attached to CN404, and then attach it again.

[MAIN BOARD] (Component Side)



NOTES ON REPLACING BD BOARD OR MD MECHANISM DECK

In replacing the BD board or MD mechanism deck, perform the work through the steps provided below:

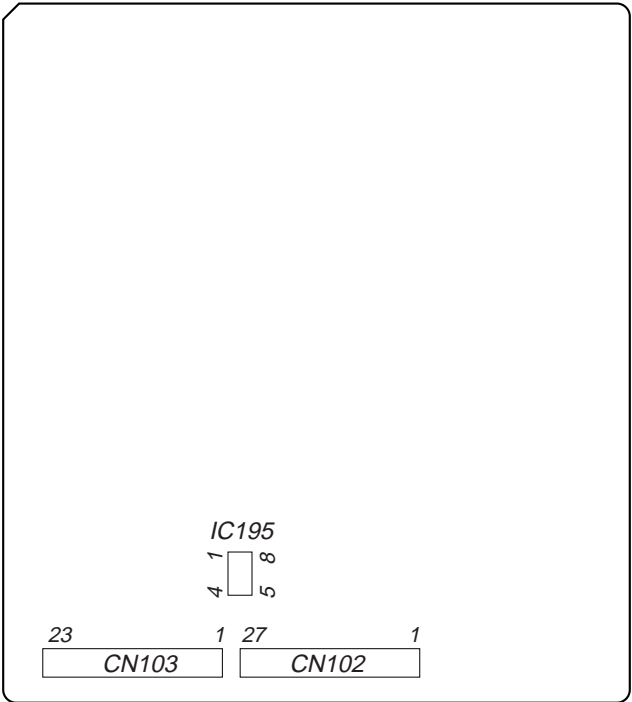
1. Remove the IC195 from the BD board to be replaced.
2. Remove the IC195 from new BD board.
3. Mount the IC195 on new BD board, which was removed from the BD board to be replaced.
4. Install new BD board in the set.

**Note:** The IC195 cannot be replaced with a new part.

OPERATION CHECK IN NORMAL MODE

Aiso in checking the recording and other functions, connect the set to the PC with a USB cable and perform the operation on the application software “OpenMG Jukebox” attached.

– BD BOARD (Conductor Side) –





## RETRY CAUSE DISPLAY MODE

- In this test mode, the causes for retry of the unit during recording can be displayed on the fluorescent indicator tube. During playback, the “track mode” for obtaining track information will be set. This is useful for locating the faulty part of the unit.
- The following will be displayed :  
During recording and stop : Retry cause, number of retries, and number of retry errors.  
During playback : Information such as type of disc played, part played, copyright.  
These are displayed in hexadecimal.

### Procedure:

1. Insert the recordable disc.
2. Press **MENU/NO** button to display “Edit Menu” on the fluorescent display.
3. Turn **◀◀ AMS ▶▶** knob to display “All Erase?” on the fluorescent display.
4. Press **YES** button or **◀◀ AMS ▶▶** knob to display “All Erase?” on the fluorescent display.
5. Press **YES** button, “Complete!” is displayed on the fluorescent display and it turns off immediately.
6. Procedure 1: Press the **■** button continuously for about 10 seconds.  
Procedure 2: Press the **LEVEL/DISPLAY/CHAR** button while pressing the **■** button and **MENU/NO** button.
7. When the mode is set, “RTs 00c 00e 000” is displayed.
8. Press the **● REC** button to start recording. Then press the **||** button and start recording.
9. To check the “track mode”, press the **▷** button to start play.
10. To exit the test mode, press the **I/O** button, and turn OFF the power. When “TOC” disappears, disconnect the power plug from the outlet.  
If the test mode cannot be exited, refer to “Forced Reset” on page 8.

**Fig. 1 Reading the Test Mode Display  
(During recording and stop)**

RTs@ @c##e\*\*\*

Fluorescent display tube display

@@ : Cause of retry  
## : Number of retries  
\*\*\* : Number of retry errors

**Fig. 2 Reading the Test Mode Display  
(During playback)**

@ @####\*\*\$\$

Fluorescent display tube display

@@ : Parts No. (name of area named on TOC)  
### : Cluster } Address (Physical address on disc)  
\*\* : Sector  
\$\$ : Track mode (Track information such as copyright information of each part)

### Reading the Retry Cause Display

	Higher Bits				Lower Bits				Hexa-decimal	Cause of Retry	Occurring conditions
Hexadecimal	8	4	2	1	8	4	2	1			
Bit	b7	b6	b5	b4	b3	b2	b1	b0			
Binary	0	0	0	0	0	0	0	1	01	shock	When track jump (shock) is detected
	0	0	0	0	0	0	1	0	02	ader5	When ADER was counted more than five times continuously
	0	0	0	0	0	1	0	0	04	Discontinuous address	When ADIP address is not continuous
	0	0	0	0	1	0	0	0	08	DIN unlock	When DIN unlock is detected
	0	0	0	1	0	0	0	0	10	FCS incorrect	When not in focus
	0	0	1	0	0	0	0	0	20	IVR rec error	When ABCD signal level exceeds the specified range
	0	1	0	0	0	0	0	0	40	CLV unlock	When CLV is unlocked
	1	0	0	0	0	0	0	0	80	Access fault	When access operation is not performed normally

### Reading the Display:

Convert the hexadecimal display into binary display.  
If more than two causes, they will be added.

### Example

When 42 is displayed:  
Higher bit : 4 = 0100 → b6  
Lower bit : 2 = 0010 → b1  
In this case, the retry cause is combined of “CLV unlock” and “ader5”.

When A2 is displayed:  
Higher bit : A = 1010 → b7+b5  
Lower bit : 2 = 0010 → b2  
The retry cause in this case is combined of “access fault”, “IVR rec error”, and “ader5”.

**Hexadecimal → Binary Conversion Table**

Hexadecimal	Binary	Hexadecimal	Binary
0	0000	8	1000
1	0001	9	1001
2	0010	A	1010
3	0011	B	1011
4	0100	C	1100
5	0101	D	1101
6	0110	E	1110
7	0111	F	1111

## Reading the Track Mode Display

	Higher Bits				Lower Bits				Hexa- decimal	Details	
Hexadecimal	8	4	2	1	8	4	2	1			
Bit	b7	b6	b5	b4	b3	b2	b1	b0		When 0	When 1
Binary	0	0	0	0	0	0	0	1	01	Emphasis OFF	Emphasis ON
	0	0	0	0	0	0	1	0	02	Monaural	Stereo
	0	0	0	0	0	1	0	0	04	This is 2-bit display. Normally 01. 01:Normal audio. Others:Invalid	
	0	0	0	0	1	0	0	0	08		
	0	0	0	1	0	0	0	0	10	Audio (Normal)	Invalid
	0	0	1	0	0	0	0	0	20	Original	Digital copy
	0	1	0	0	0	0	0	0	40	Copyright	No copyright
	1	0	0	0	0	0	0	0	80	Write prohibited	Write allowed

### Reading the Display:

Convert the hexadecimal display into binary display. If more than two causes, they will be added.

Example When 84 is displayed:

Higher bit : 8 = 1000 → b7

Lower bit : 4 = 0100 → b2

In this case, as b2 and b7 are 1 and others are 0, it can be determined that the retry cause is combined of “emphasis OFF”, “monaural”, “original”, “copyright exists”, and “write allowed”.

Example When 07 is displayed:

Higher bit : 0 = 1000 → All 0

Lower bit : 7 = 0111 → b0+b1+b2

In this case, as b0, b1, and b2 are 1 and others are 0, it can be determined that the retry cause is combined of “emphasis ON”, “stereo”, “original”, “copyright exists”, and “write prohibited”.

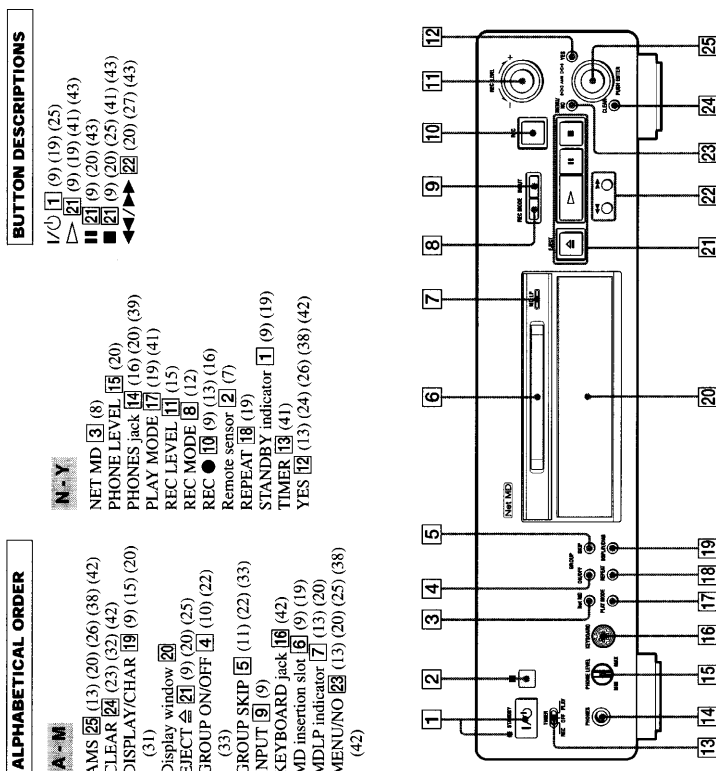
### Hexadecimal → Binary Conversion Table

Hexadecimal	Binary	Hexadecimal	Binary
0	0000	8	1000
1	0001	9	1001
2	0010	A	1010
3	0011	B	1011
4	0100	C	1100
5	0101	D	1101
6	0110	E	1110
7	0111	F	1111

## SECTION 2 GENERAL

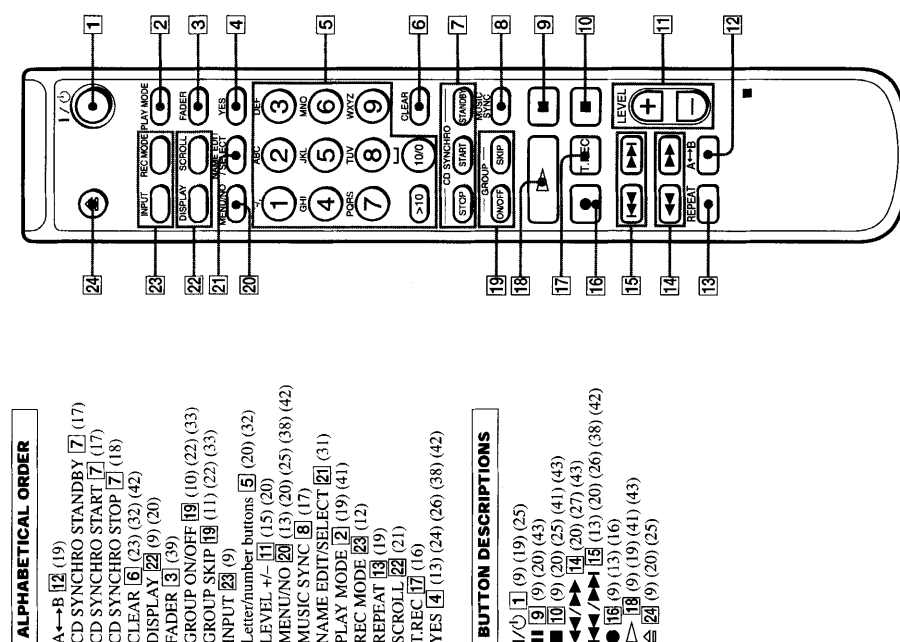
This section is extracted  
from instruction manual.

### Main unit



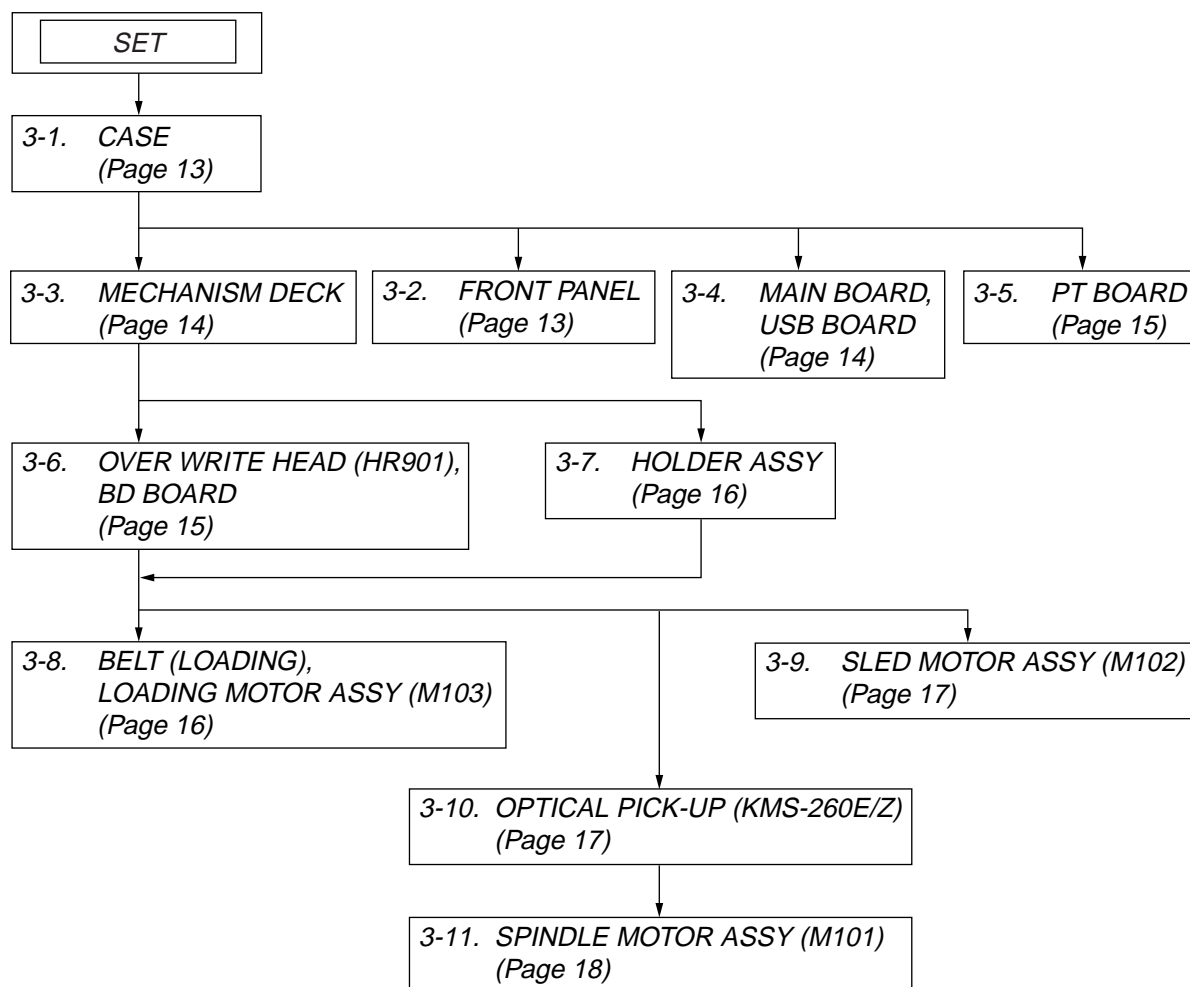
### List of Button Locations and Reference Pages

### Remote control

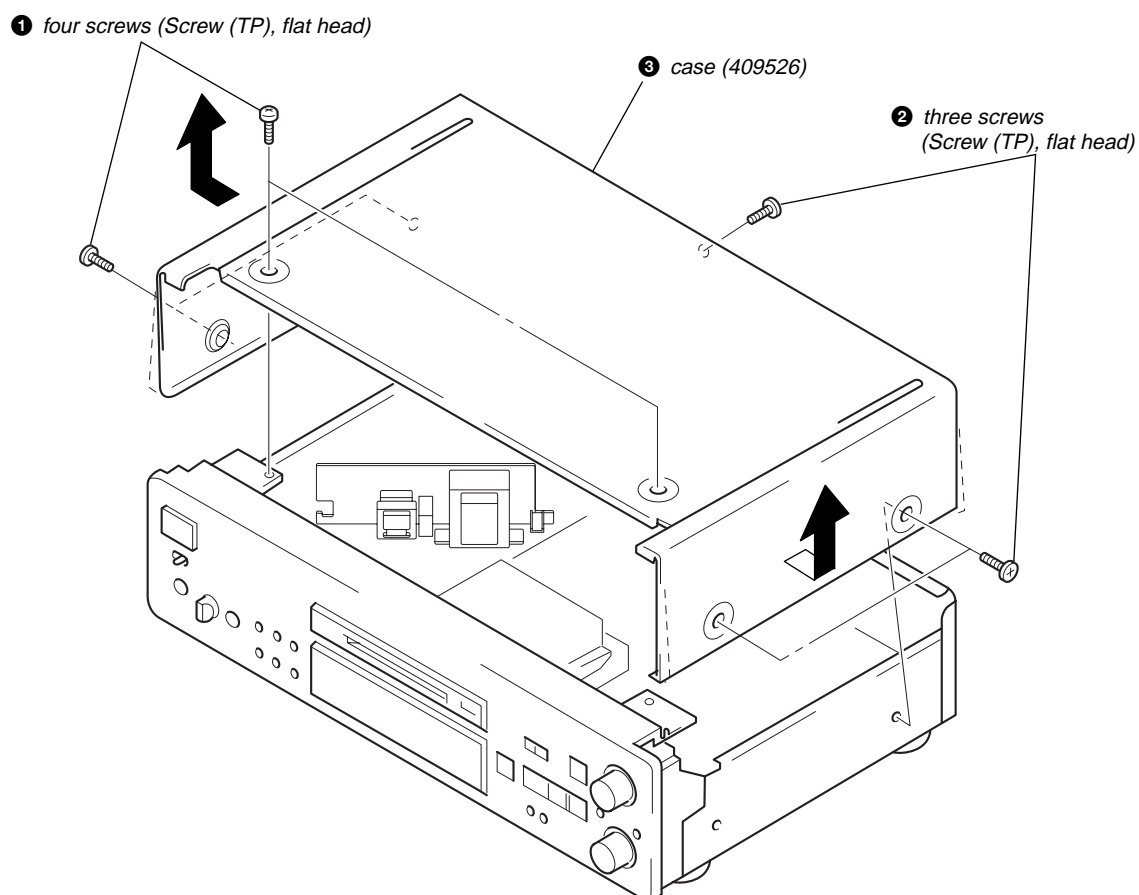


## SECTION 3 DISASSEMBLY

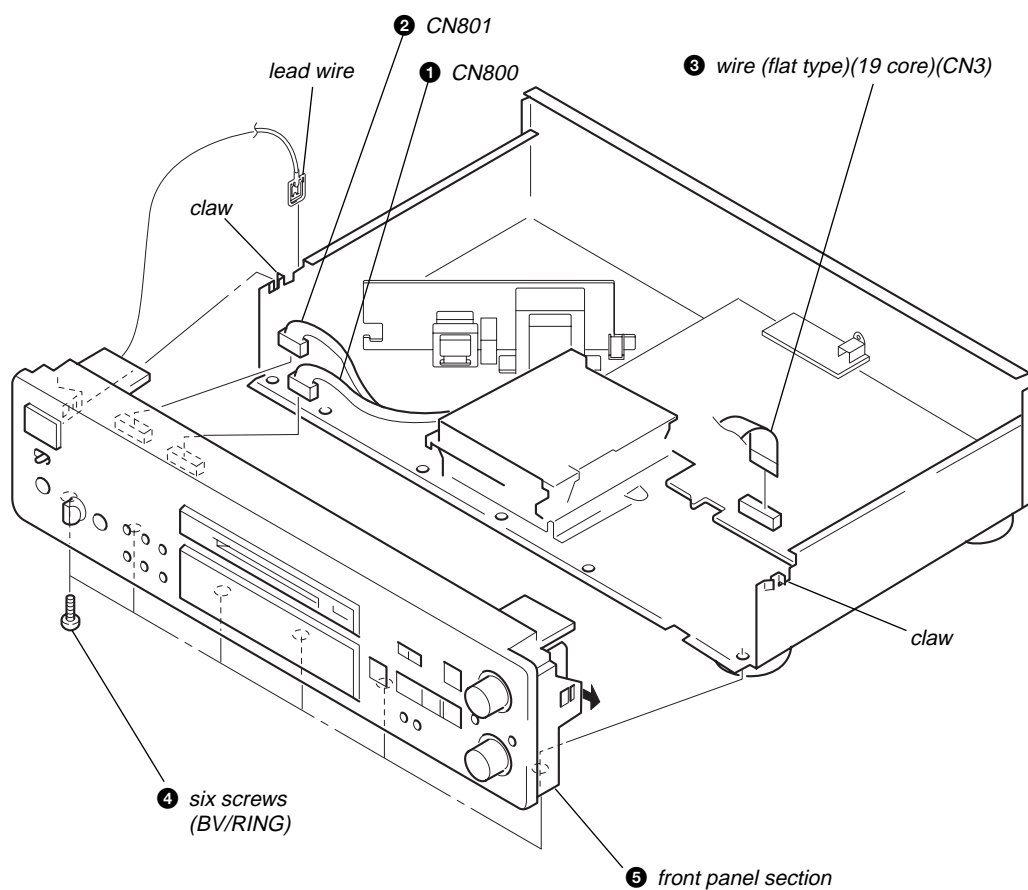
- This set can be disassembled in the order shown below.



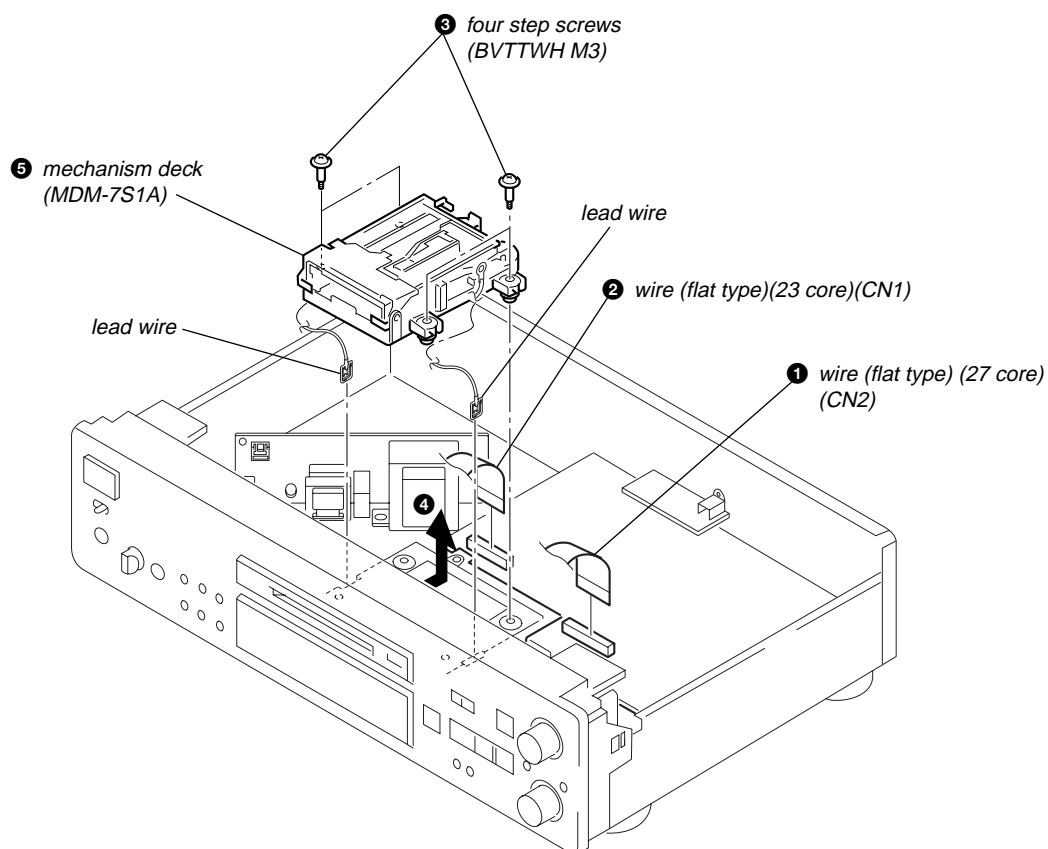
### 3-1. CASE



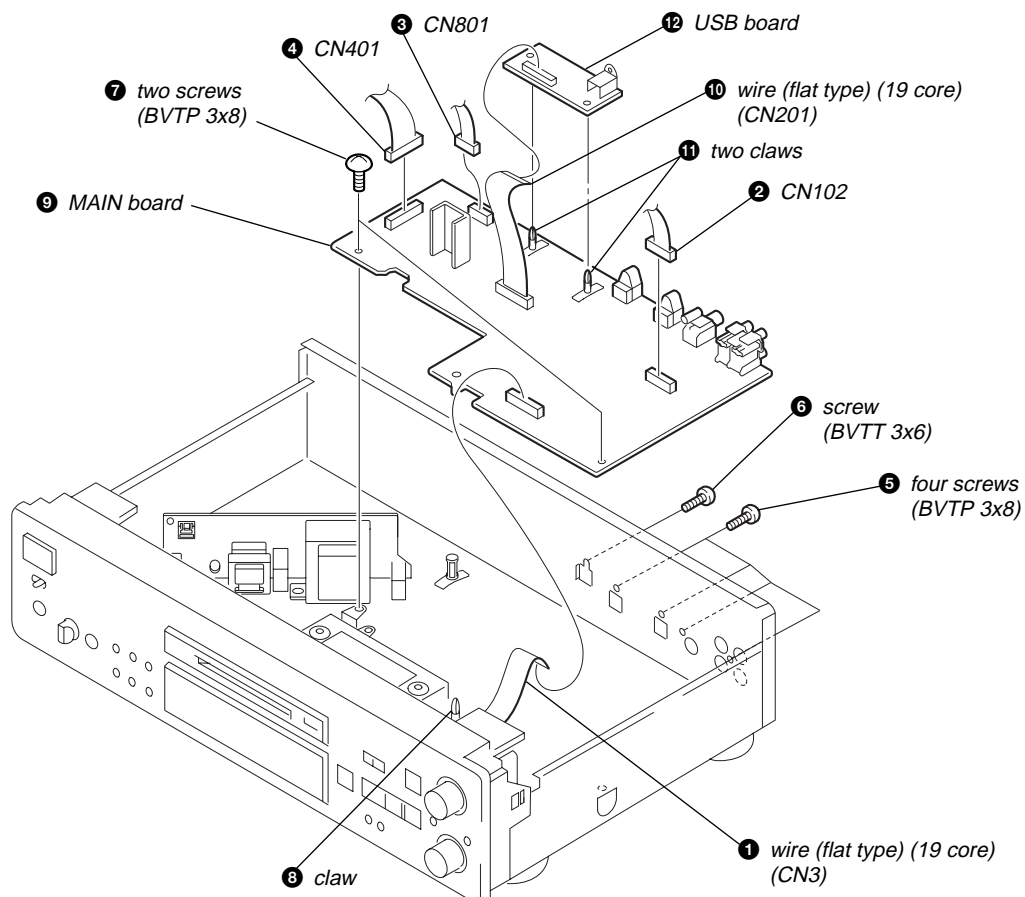
### 3-2. FRONT PANEL



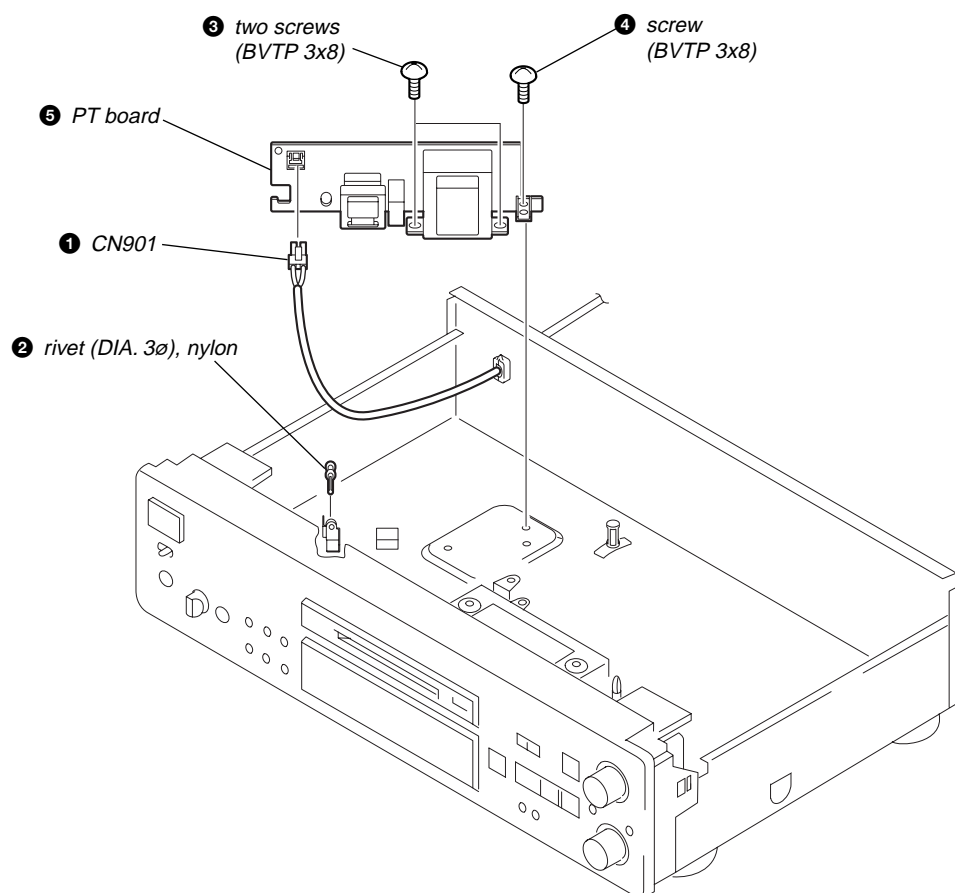
### 3-3. MECHANISM DECK



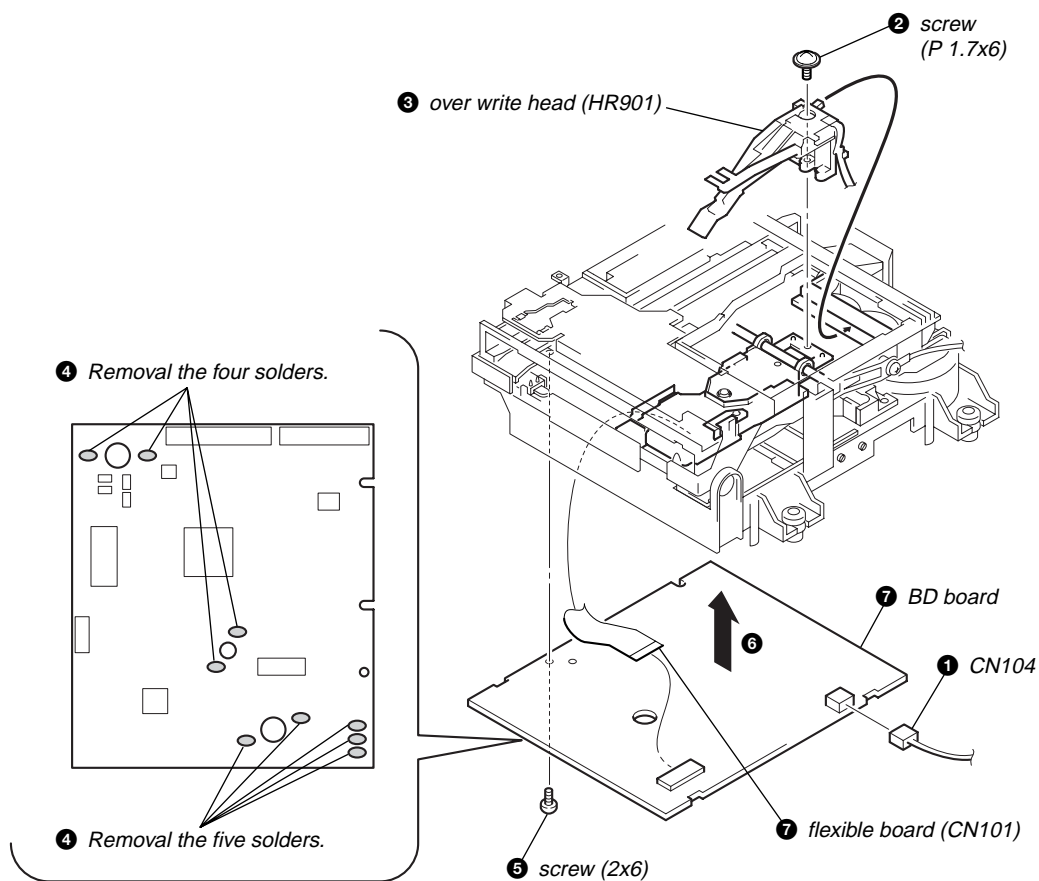
### 3-4. MAIN BOARD, USB BOARD



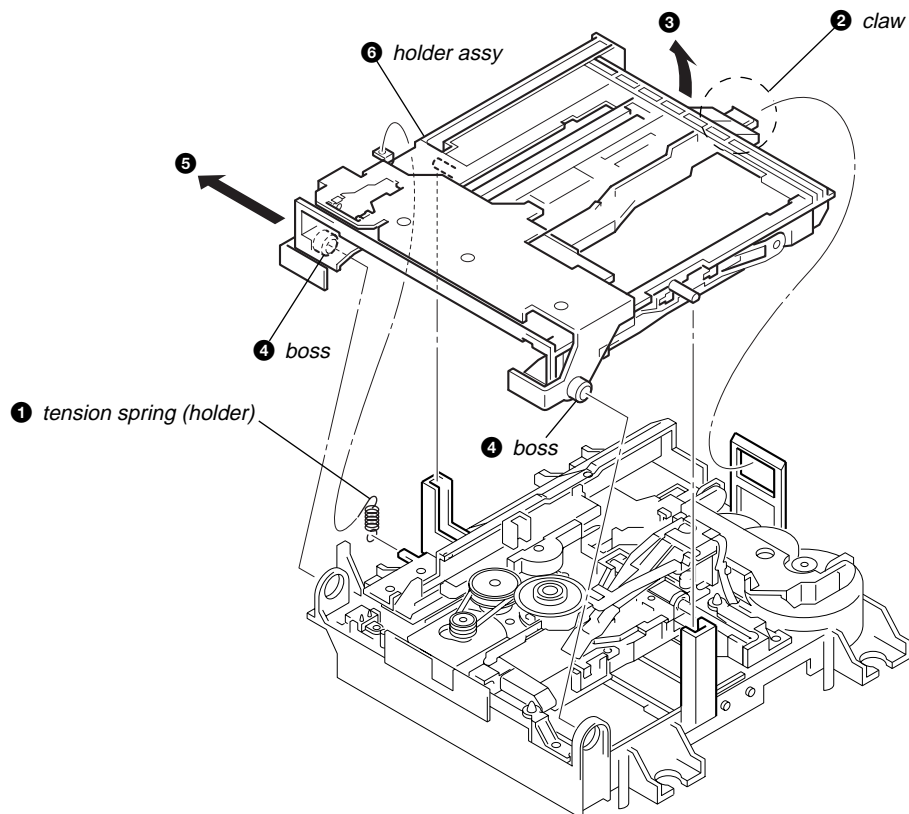
## 3-5. PT BOARD



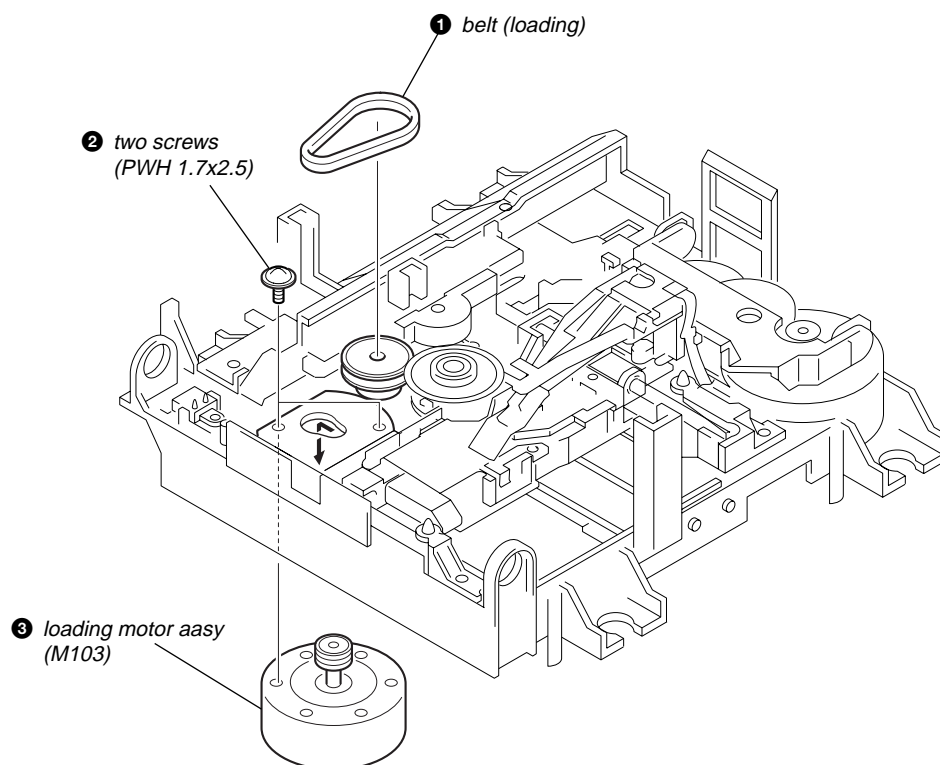
## 3-6. OVER WRITE HEAD (HR901), BD BOARD



### 3-7. HOLDER ASSY

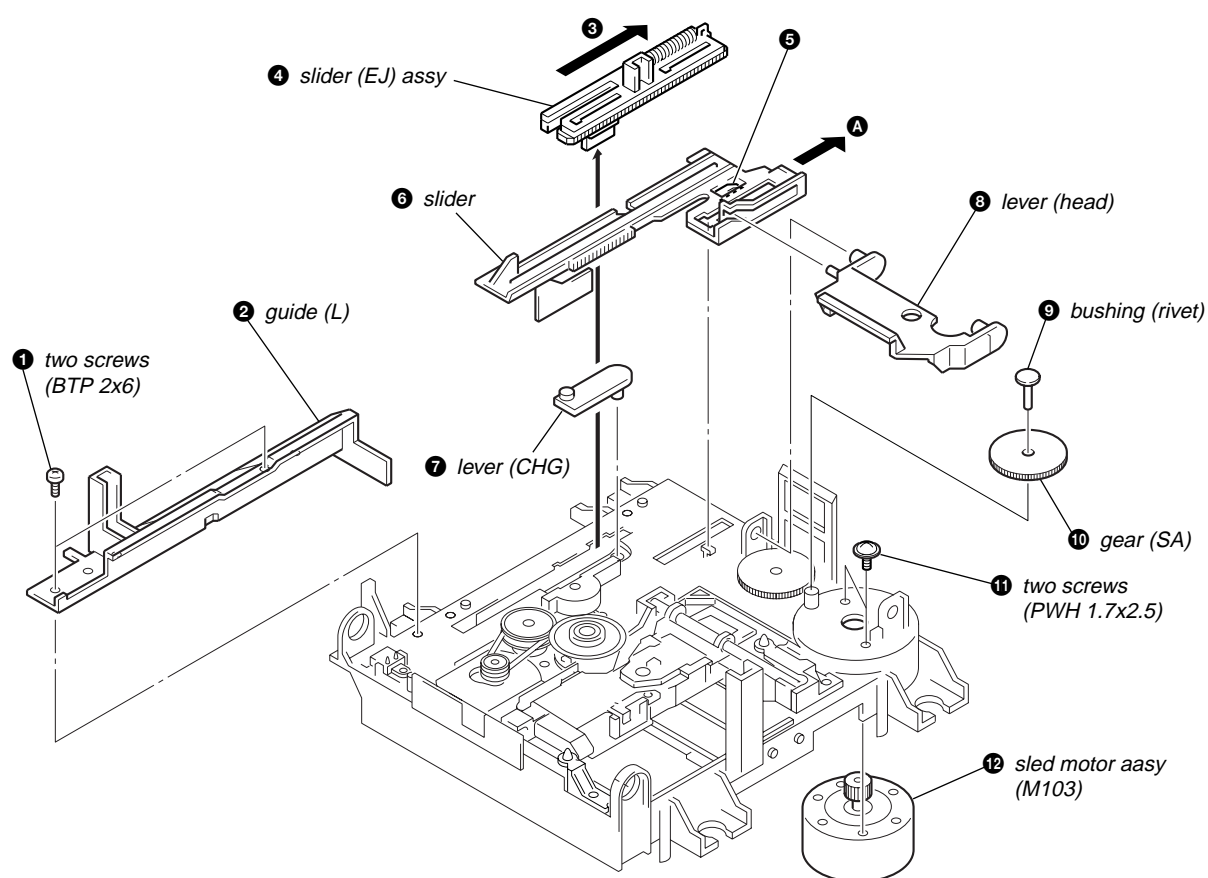


### 3-8. BELT (LOADING), LOADING MOTOR ASSY (M103)

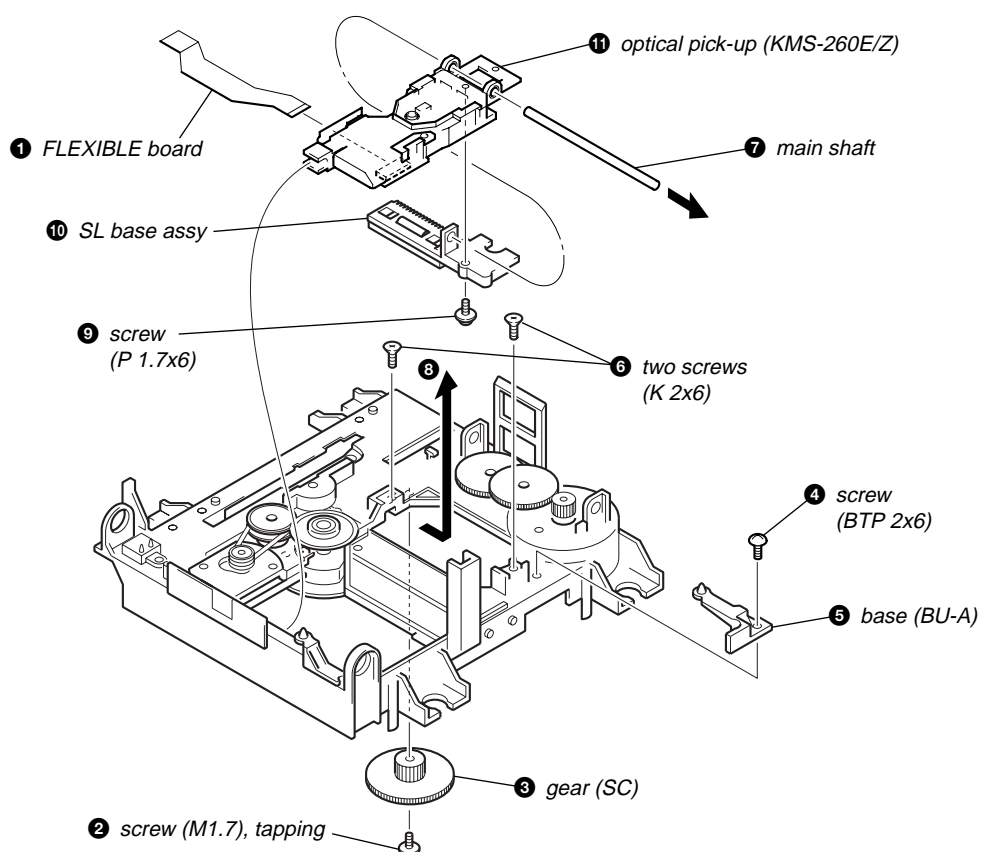




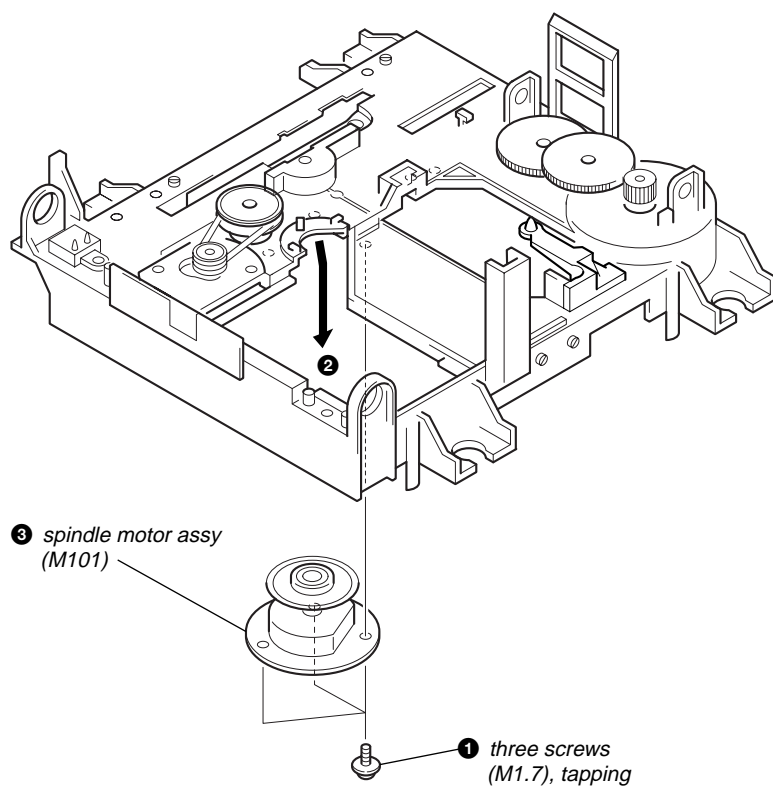
## 3-9. SLED MOTOR ASSY (M102)



## 3-10. OPTICAL PICK-UP (KMS-260B/260E)


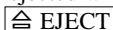



3-11. SPINDLE MOTOR ASSY (M101)




## SECTION 4 TEST MODE

### 4-1. PRECAUTIONS FOR USE OF TEST MODE

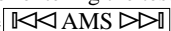



- As loading related operations will be performed regardless of the test mode operations being performed, be sure to check that the disc is stopped before setting and removing it.  
Even if the  EJECT button is pressed while the disc is rotating during continuous playback, continuous recording, etc., the disc will not stop rotating.  
Therefore, it will be ejected while rotating.  
Be sure to press the  EJECT button after pressing the  MENU/NO button and the rotation of disc is stopped.


#### 4-1-1. Recording laser emission mode and operating buttons



- Continuous recording mode (CREC 1MODE) (C35)
- Laser power check mode (LDPWR CHECK) (C13)
- Laser power adjustment mode (LDPWR ADJUST) (C04)
- Iop check (Iop Compare) (C27)
- Iop value nonvolatile writing (Iop NV Save) (C06)
- Traverse (MO) check (EF MO CHECK) (C14)
- Traverse (MO) adjustment (EF MO ADJUST) (C07)
- When pressing the  REC button.

### 4-2. SETTING THE TEST MODE

The following are two methods of entering the test mode.

**Procedure 1:** While pressing the  knob and  button, connect the power plug to an outlet, and release the  knob and  button.

When the test mode is set, “[Check]” will be displayed. Rotating the  knob switches between the following three groups; ... ↔ Check ↔ Service ↔ Develop ↔ ....


**Procedure 2:** While pressing the  knob, connect the power plug to the outlet and release the  knob.  
When the test mode is set, “TEMP CHECK” will be displayed. By setting the test mode using this method, only the “Check” group of method 1 can be executed.

**NOTE:** Do not use the test mode in the [Develop] group.




If used, the unit may not operate normally.

If the [Develop] group is set accidentally, press the  MENU/NO button immediately to exit the [Develop] group.

### 4-3. EXITING THE TEST MODE

Press the  REPEAT button. The disc is ejected when loaded, and “Standby” display blinks, and the STANDBY state is set.




### 4-4. BASIC OPERATIONS OF THE TEST MODE

All operations are performed using the  knob,  YES button, and  MENU/NO button.

The functions of these buttons are as follows.

Function name		Function
MENU/NO button		Cancel or move to top hierarchy
YES button		Set
AMS knob	Left or Right	Select
	Push	Set submenu

### 4-5. SELECTING THE TEST MODE

There are 25 types of test modes as shown below. The groups can be switched by rotating the  knob. After selecting the group to be used, press the  YES button. After setting a certain group, rotating the  knob switches between these modes. Refer to “Group” in the table for details selected.

All adjustments and checks during servicing can be performed in the test mode in the Service group.

**NOTE:** Do not use the test mode in the [Develop] group.

If used, the unit may not operate normally.

If the [Develop] group is set accidentally, press the  MENU/NO button immediately to exit the [Develop] group.

Display	No.	Details	Mark	Group	
				Check	Service
AUTO CHECK	C01	Automatic self-diagnosis			○
Err Display	C02	Error history display, clear			○
TEMP ADJUS	C03	Temperature compensation offset adjustment			○
LDPWR ADJUS	C04	Laser power adjustment			○
Iop Write	C05	Iop data writing			○
Iop NV Save	C06	Writes current Iop value in read nonvolatile memory using microprocessor			○
EF MO ADJUS	C07	Traverse (MO) adjustment			○
EF CD ADJUS	C08	Traverse (CD) adjustment			○
FBIAS ADJUS	C09	Focus bias adjustment			○
AG Set (MO)	C10	Focus, tracking gain adjustment (MO)			○
AG Set (CD)	C11	Focus, tracking gain adjustment (CD)			○
TEMP CHECK	C12	Temperature compensation offset check		○	○
LDPWR CHECK	C13	Laser power check		○	○
EF MO CHECK	C14	Traverse (MO) check		○	○
EF CD CHECK	C15	Traverse (CD) check		○	○
FBIAS CHECK	C16	Focus bias check		○	○
ScurveCHECK	C17	S-curve check	×	○	
VERIFYMODE	C18	Nonvolatile memory check	×	○	
DETRK CHECK	C19	Detrack check	×	○	
0920 CHECK	C25	Most circumference check	×	○	
Iop Read	C26	Iop data display		○	○
Iop Compare	C27	Comparison with initial Iop value written in nonvolatile memory		○	○
ADJ CLEAR	C28	Initialization of nonvolatile memory for adjustment values			○
INFORMATION	C31	Display of microprocessor version, etc.		○	○
CPLAY1MODE	C34	Continuous playback mode		○	○
CREC 1MODE	C35	Continuous recording mode		○	○

- For details of each adjustment mode, refer to “5. Electrical Adjustments”.
- For details of “Err Display”, refer to “Self-Diagnosis Function” on page 3.
- If a different mode has been selected by mistake, press the **MENU/NO** button to exit that mode.
- Modes with (X) in the Mark column are not used for servicing and therefore are not described in detail. If these modes are set accidentally, press the **MENU/NO** button to exit the mode immediately.

#### 4-5-1. Operating the Continuous Playback Mode

- Entering the continuous playback mode
  - ① Set the disc in the unit. (Whichever recordable discs or discs for playback only are available.)
  - ② Rotate the **◀◀ AMS ▶▶** knob and display “CPLAY1 MODE”(C34).
  - ③ Press the **YES** button to change the display to “CPLAY1 MID”.
  - ④ When access completes, the display changes to “C = 0000 AD = 00”.

**Note :** The numbers “00” displayed show you error rates and ADER.
- Changing the parts to be played back
  - ① Press the **YES** button during continuous playback to change the display as below.  
 “CPLAY1 MID” → “CPLAY1 OUT” → “CPLAY1 IN”
  - ② When access completes, the display changes to “C = 0000 AD = 00”.


**Note :** The numbers “00” displayed show you error rates and ADER.
- Ending the continuous playback mode
  - ① Press the **MENU/NO** button. The display will change to “CPLAY1 MODE”(C34).
  - ② Press the **EJECT** button to remove the disc.

**Note :** The playback start addresses for IN, MID, and OUT are as follows.

IN     40h cluster  
 MID   300h cluster  
 OUT   700h cluster

#### 4-5-2. Operating the Continuous Recording Mode (Use only when performing self-recording/playback check.)

##### 1. Entering the continuous recording mode

- ① Set a recordable disc in the unit.
- ② Rotate the  knob and display "CREC 1MODE" (C35).
- ③ Press the **YES** button to change the display to "CREC1 MID".
- ④ When access completes, the display changes to "CREC 1 (0000)" and **REC** lights up.

**Note :** The numbers "0" displayed shows you the recording position addresses.

##### 2. Changing the parts to be recorded

- ① When the **YES** button is pressed during continuous recording, the display changes as below.

"CREC1 MID" → "CREC1 OUT" → "CREC1 IN"

When pressed another time, the parts to be recorded can be changed. **REC** goes off.

- ② When access completes, the display changes to "CREC 1 (0000)" and **REC** lights up.

**Note :** The numbers "0" displayed shows you the recording position addresses.

##### 3. Ending the continuous recording mode

- ① Press the **MENU/NO** button. The display changes to "CREC1 MODE" (C35) and **REC** goes off.
- ② Press the **EJECT** button to remove the disc.

**Note 1 :** The recording start addresses for IN, MID, and OUT are as follows.






IN 40h cluster  
MID 300h cluster  
OUT 700h cluster

**Note 2 :** The **MENU/NO** button can be used to stop recording anytime.

**Note 3 :** Do not perform continuous recording for long periods of time above 5 minutes.

**Note 4 :** During continuous recording, be careful not to apply vibration.

#### 4-6. FUNCTIONS OF OTHER BUTTONS

Function	Contents
	Sets continuous playback when pressed in the STOP state. When pressed during continuous playback, the tracking servo turns ON/OFF.
	Stops continuous playback and continuous recording.
	The sled moves to the outer circumference only when this is pressed.
	The sled moves to the inner circumference only when this is pressed.
REC MODE	Switches between the pit and groove modes when pressed.
PLAY MODE	Switches the spindle servo mode (CLV S ↔ CLV A).
LEVEL/DISPLAY/CHAR	Switches the displayed contents each time the button is pressed.
	Ejects the disc.
REPEAT	Exits the test mode.

#### 4-7. TEST MODE DISPLAYS

Each time the **LEVEL/DISPLAY/CHAR** button is pressed, the display changes in the following order.

When CPLAY and CREC are started, the display will forcibly be switched to the error rate display as the initial mode.

##### 1. Mode display

Displays "TEMP ADJUS" (C03), "CPLAY1MODE" (C34), etc.

##### 2. Error rate display

Displays the error rate in the following way.

C = □□□□ AD = □□

C = Indicates the C error.

AD = Indicates ADER.

##### 3. Address display

The address is displayed as follows. (MO:recordable disc, CD:playback only disc)

If the **REC MODE** button is pressed, the display switches from groove to pit or vice versa.

h = □□□□ s = □□□□ (MO pit and CD)

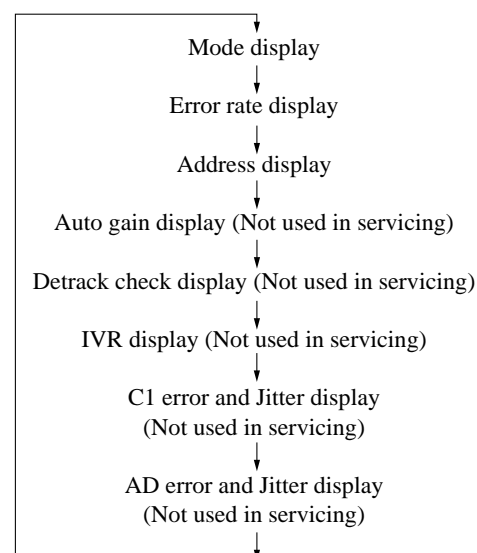
h = □□□□ a = □□□□ (MO groove)

h = Indicates the header address.

s = Indicates the SUBQ address.

a = Indicates the ADIP address.

**Note:** "—" is displayed when the address cannot be read.



#### 4-8. MEANINGS OF OTHER DISPLAYS

Display	Contents	
	When Lit	When Off
▷	Servo ON	Servo OFF
II	Tracking servo OFF	Tracking servo ON
REC	Recording mode ON	Recording mode OFF
SYNC	CLV low speed mode	CLV normal mode
L.SYNC	ABCD adjustment completed	
OVER	Tracking offset cancel ON	Tracking offset cancel OFF
B/1	Tracking auto gain OK	
A-/REP	Focus auto gain OK	
TRACK/(LP4)/calender fram	Pit	Groove
DISC/LP2	High reflection	Low reflection
SLEEP/SHUF	CLV S	CLV A
MONO	CLV LOCK	CLV UNLOCK

#### 4-9. AUTOMATIC SELF-DIAGNOSIS FUNCTION

This test mode performs CREC and CPLAY automatically for mainly checking the characteristics of the optical pick-up.

To perform this test mode, the laser power must first be checked.

Perform AUTO CHECK after the laser power check and Iop check.

##### Procedure

1. Press the **YES** button. If “LDPWR ミチェック” is displayed, it means that the laser power check has not been performed. In this case, perform the laser power check and Iop compare, and then repeat from step 1.
2. If a disc is in the mechanical deck, it will be ejected forcibly.  
“DISC IN” will be displayed in this case. Load a test disc (MDW-74/GA1) which can be recorded.
3. If a disk is loaded at step 2, the check will start automatically.
4. When “XX CHECK” is displayed, the item corresponding to XX will be performed.  
When “06 CHECK” completes, the disc loaded at step 2 will be ejected. “DISC IN” will be displayed. Load the check disc (MD) TDYS-1.
5. When the disc is loaded in step 4, the check will automatically be resumed from “07 CHECK”.
6. After completing to test item 12, check OK or NG will be displayed. If all items are OK, “CHECK ALL OK” will be displayed. If any item is NG, it will be displayed as “NG:xxxx”.

When “CHECK ALL OK” is displayed, it means that the optical pick-up is normal. Check the operations of the other spindle motor, thread motor, etc.

When displayed as “NG:xxxx”, it means that the optical pick-up is faulty. In this case, replace the optical pick-up.

#### 4-10. INFORMATION

Display the software version.

##### Procedure

1. If displayed as “INFORMATION”, press the **YES** button.
2. The software version will be displayed.
3. Press the **MENU/NO** button to end this mode.

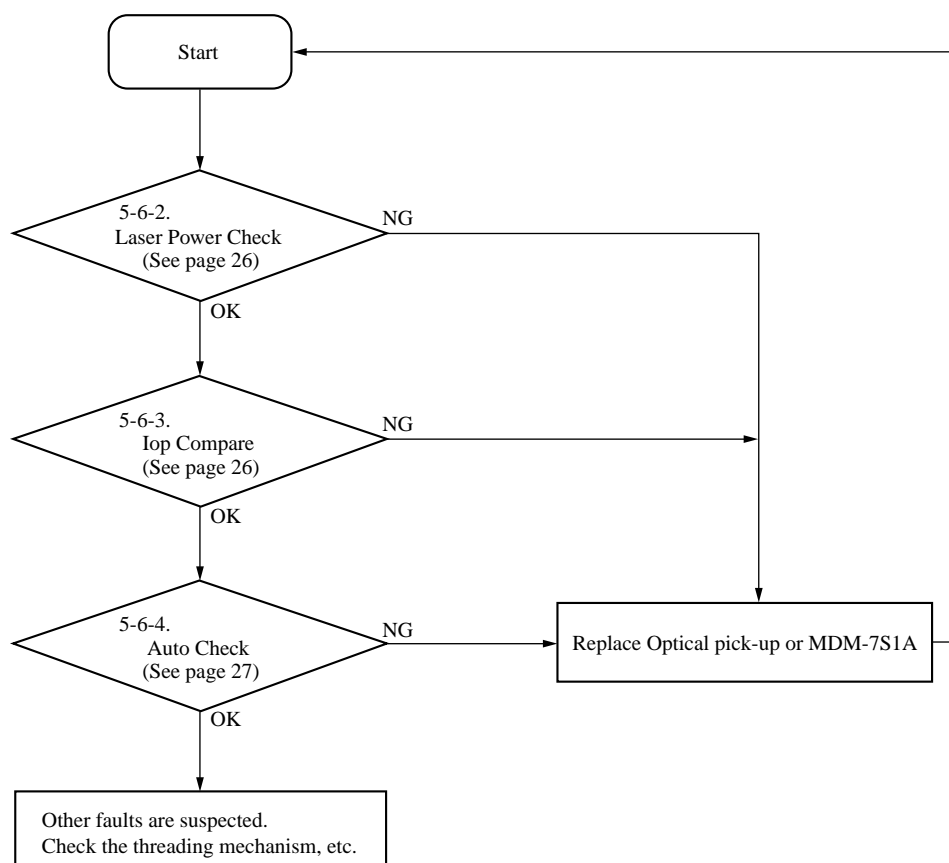
## SECTION 5 ELECTRICAL ADJUSTMENTS

**Note :** 260B: KMS-260B  
260E: KMS-260E

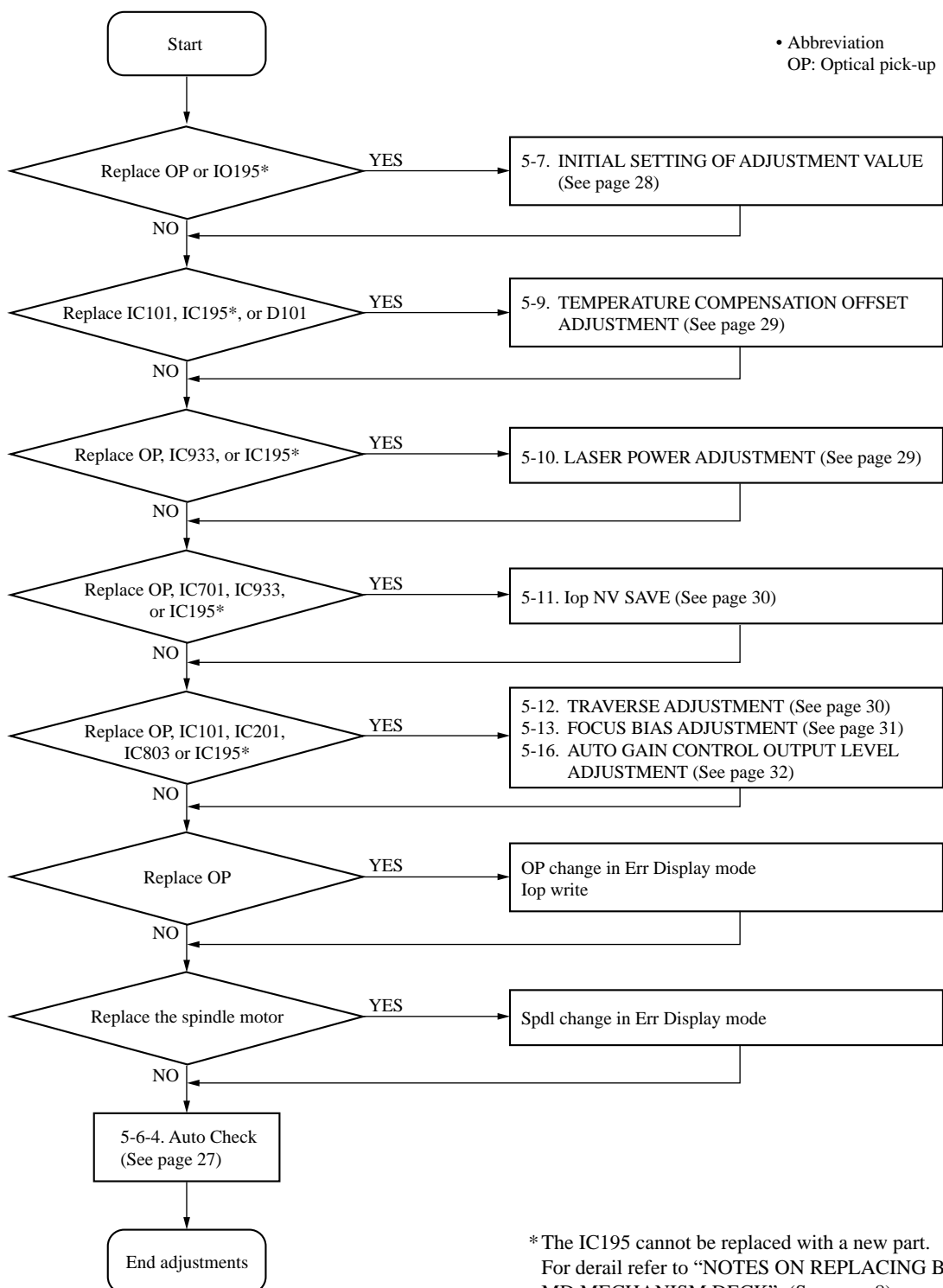
### 5-1. PARTS REPLACEMENT AND ADJUSTMENT

If malfunctions caused by Optical pick-up such as sound skipping are suspected, follow the following check.

#### Check before replacement



## Adjustment flow



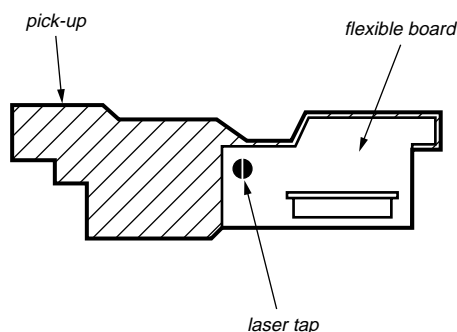


## 5-2. PRECAUTIONS FOR CHECKING LASER DIODE EMISSION

To check the emission of the laser diode during adjustments, never view directly from the top as this may lose your eye-sight.

## 5-3. PRECAUTIONS FOR USE OF OPTICAL PICK-UP (KMS-260B/260E)

As the laser diode in the optical pick-up is easily damaged by static electricity, solder the laser tap of the flexible board when using it. Before disconnecting the connector, desolder first. Before connecting the connector, be careful not to remove the solder. Also take adequate measures to prevent damage by static electricity. Handle the flexible board with care as it breaks easily.



**Optical pick-up flexible board**

## 5-4. PRECAUTIONS FOR ADJUSTMENTS

- 1) When replacing the following parts, perform the adjustments and checks with ○ in the order shown in the following table.
- 2) Set the test mode when performing adjustments.  
After completing the adjustments, exit the test mode.  
Perform the adjustments and checks in “group S” of the test mode.
- 3) Perform the adjustments to be needed in the order shown.
- 4) Use the following tools and measuring devices.
  - Check Disc (MD) TDYS-1 (Parts No. 4-963-646-01)
  - Test Disk (MDW-74/GA-1) (Parts No. 4-229-747-01)
  - Laser power meter LPM-8001 (Parts No. J-2501-046-A)
  - or
  - MD Laser power meter 8010S (Parts No. J-2501-145-A)
  - Oscilloscope (Measure after performing CAL of prove.)
  - Digital voltmeter
  - Thermometer
  - Jig for checking BD board waveform (Parts No. : J-2501-196-A)
- 5) When observing several signals on the oscilloscope, etc., make sure that VC and ground do not connect inside the oscilloscope.  
(VC and ground will become short-circuited.)
- 6) Using the above jig enables the waveform to be checked without the need to solder.  
(Refer to Servicing Note on page 6.)
- 7) As the disc used will affect the adjustment results, make sure that no dusts nor fingerprints are attached to it.

Adjustment	Parts to be replaced							
	Optical Pick-up	IC101	IC701	IC201	IC933	IC195*	D101	IC803
5-7. Initial setting of adjustment values	○	×	×	×	×	○	×	×
5-8. Recording of Iop information	○	×	×	×	×	○	×	×
5-9. TEMP ADJUST	×	○	×	×	×	○	○	×
5-10. Laser power adjustment	○	×	×	×	○	○	×	×
5-11. Iop NV Save	○	×	○	×	○	○	×	×
5-12. Traverse adjustment	○	○	×	×	×	○	×	○
5-13. Focus bias adjustment	○	○	×	○	×	○	×	○
5-16. Auto gain adjustment	○	○	×	○	×	○	×	○
5-6-4. AUTO CHECK	○	○	×	○	○	○	×	○

\*The IC195 cannot be replaced with a new part.

For detail refer to “NOTES ON REPLACING BD BOARD OR MD MECHANISM DECK” (See page 8).

## 5-5. USING THE CONTINUOUSLY RECORDED DISC

- \* This disc is used in focus bias adjustment and error rate check.
- The following describes how to create a continuous recording disc.
1. Insert a disc (blank disc) commercially available.
  2. Rotate the **◀◀ AMS ▶▶** knob and display “CREC1 MODE” (C35).
  3. Press the **YES** button again to display “CREC1 MID”.
  4. Press the **LEVEL/DISPLAY/CHAR** button.  
Display “CREC (0300)” and start to recording.
  5. Complete recording within 5 minutes.
  6. Press the **MENU/NO** button and stop recording .
  7. Press the **EJECT** button and remove the disc.

The above has been how to create a continuous recorded data for the focus bias adjustment and error rate check.

### Note :

- Be careful not to apply vibration during continuous recording.

## 5-6. CHECKS PRIOR TO REPAIRS

These checks are performed before replacing parts according to “approximate specifications” to determine the faulty locations. For details, refer to “Checks Prior to Parts Replacement and Adjustments” (See page 8).

### 5-6-1. Temperature Compensation Offset Check

When performing adjustments, set the internal temperature and room temperature to 22 to 28°C.

Checks cannot be performed properly if performed after some time from power ON due to the rise in the temperature of the IC and diode, etc. So, perform the checks again after waiting some time.

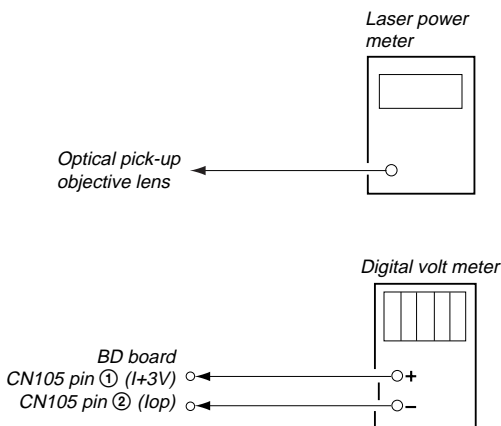
#### Checking Procedure:

1. Rotate the **◀◀ AMS ▶▶** knob to display “TEMP CHECK”. (C12)
2. Press the **YES** button.
3. “T=@@ (##) [OK]” should be displayed. If “T=@@ (##) [NG]” is displayed, it means that the results are bad.  
(@@ indicates the current value set, and ## indicates the value written in the non-volatile memory.)

### 5-6-2. Laser Power Check

Before checking, check the Iop value of the optical pick-up.  
(Refer to 5-8. Recording and Displaying Iop Information.)

#### Connection :



#### Checking Procedure:

1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly, press the **◀◀** button or **▶▶** button to move the optical pick-up.)  
Connect the digital volt meter to CN105 pin ① (I+3V) and CN105 pin ② (Iop).
2. Then, rotate the **◀◀ AMS ▶▶** knob and display “LDPWR CHECK”.
3. Press the **YES** button once and display “L 0.93 mW \$ 00”.  
Check that the reading of the laser power meter become the specified value.
4. Press the **YES** button once more and display “L 7.25 mW \$ 00”. Check that the reading the laser power meter and digital volt meter satisfy the specified value.

#### Specified Value :

Laser power meter reading : L 0.93mW: 0.85-0.91mW (260B)  
0.90-0.96mW (260E)  
L 7.25mW: 6.80-7.20mW (260B)  
7.00-7.50mW (260E)

Digital voltmeter reading : Optical pick-up displayed value ± 10%

(Optical pick-up label)

KMS260B  
20101  
H0576

(For details of the method for checking this value, refer to “5-8. Recording and Displaying Iop Information”.)

Iop = 57.6 mA in this case

$Iop (mA) = Digital\ voltmeter\ reading (mV) / 1 (\Omega)$

5. Press the **MENU/NO** button and display “LDPWR CHECK” and stop the laser emission.  
(The **MENU/NO** button is effective at all times to stop the laser emission.)

**Note 1:** After step 4, each time the **YES** button is pressed, the display will be switched between “L 0.73 mW \$ 00”, “L 6.40 mW \$ 00”, and “L Wp ホセイ \$ 00”. Nothing needs to be performed here.

### 5-6-3. Iop Compare

The current Iop value at laser power 7 mw output and reference Iop value (set at shipment) written in the nonvolatile memory are compared, and the rate of increase/decrease will be displayed in percentage.

**Note:** Perform this function with the optical pick-up set at room temperature.

#### Procedure

1. Rotate the **◀◀ AMS ▶▶** knob to display “Iop Compare”.
2. Press the **YES** button and start measurements.
3. When measurements complete, the display changes to Iop [STOP] → Iop [7.0mW] → “±xx%yy”.  
xx is the percentage of increase/decrease, and OK or NG is displayed at yy to indicate whether the percentage of increase/decrease is within the allowable range.
4. Press the **MENU/NO** button to end.

### 5-6-4. Auto Check

This test mode performs CREC and CPLAY automatically for mainly checking the characteristics of the optical pick-up. To perform this test mode, the laser power must first be checked. Perform Auto Check after the laser power check and Iop compare.

#### Procedure

1. Press the **[YES]** button. If “LDPWR ミチエック” is displayed, it means that the laser power check has not been performed. In this case, perform the laser power check and Iop compare, and then repeat from step 1.
2. If a disc is in the mechanical deck, it will be ejected forcibly. “DISC IN” will be displayed in this case. Load a test disc (MDW-74/GA1) which can be recorded.
3. If a disc is loaded at step 2, the check will start automatically.
4. When “XX CHECK” is displayed, the item corresponding to XX will be performed.  
When “06 CHECK” completes, the disc loaded at step 2 will be ejected. “DISC IN” will be displayed. Load the check disc (MD) TDYS-1.
5. When the disc is loaded, the check will automatically be resumed from “07 CHECK”.
6. After completing to test item 12, check OK or NG will be displayed. If all items are OK, “CHECK ALL OK” will be displayed. If any item is NG, it will be displayed as “NG:xxxx”.

When “CHECK ALL OK” is displayed, it means that the optical pick-up is normal. Check the operations of the other spindle motor, thread motor, etc.

When displayed as “NG:xxxx”, it means that the optical pick-up is faulty. In this case, replace the optical pick-up.

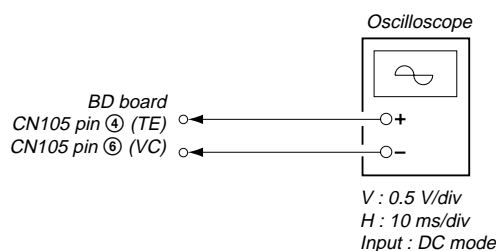
### 5-6-5. Other Checks

All the following checks are performed by the Auto Check mode. They therefore need not be performed in normal operation.

1. Load a continuously recorded test disc (MDW-74/GA1).  
(Refer to “5-5. Using the Continuously Recorded Disc”).

### 5-6-6. Traverse Check

#### Connection :

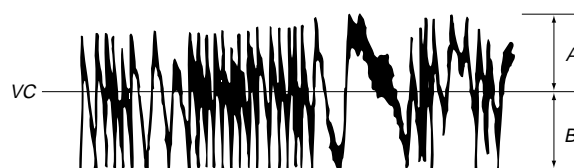


#### Checking Procedure:

1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) of the BD board.
2. Load a test disc (MDW-74/GA1). (Refer to Note 1 (see page 28.))
3. Press the **[▶▶]** button and move the optical pick-up outside the pit.
4. Rotate the **[◀◀AMS▶▶]** knob and display “EF MO CHECK” (C14).
5. Press the **[YES]** button and display “EFB = **[MO]** MO-R”.  
(Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)

6. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not rotate the **[AMS]** knob.  
(Read power traverse checking)

#### (Traverse Waveform)

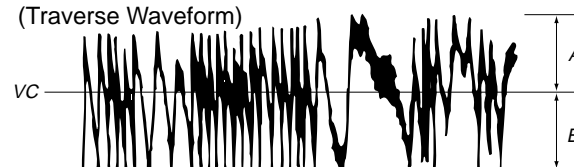


Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2(A + B)} \times 100$$

7. Press the **[YES]** button and display “EFB = **[MO]** MO-W”.
8. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not rotate the **[◀◀AMS▶▶]** knob.  
(Write power traverse checking)

#### (Traverse Waveform)

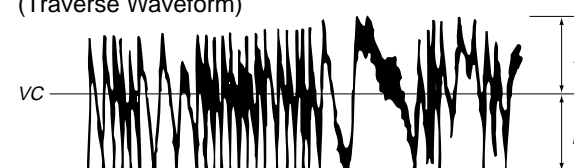


Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2(A + B)} \times 100$$

9. Press the **[YES]** button display “EFB = **[MO]** MO-P”.  
Then, the optical pick-up moves to the pit area automatically and servo is imposed.
10. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not rotate the **[◀◀AMS▶▶]** knob.

#### (Traverse Waveform)



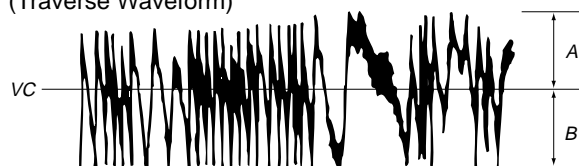
Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2(A + B)} \times 100$$

11. Press the **[YES]** button display “EF MO CHECK” (C14).  
The disc stops rotating automatically.
12. Press the **[EJECT]** button and remove the disc.
13. Load the check disc (MD) TDYS-1.
14. Rotate the **[◀◀AMS▶▶]** knob and display “EF CD CHECK” (C15).
15. Press the **[YES]** button and display “EFB = **[CD]** CD”. Servo is imposed automatically.

- Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob.

(Traverse Waveform)



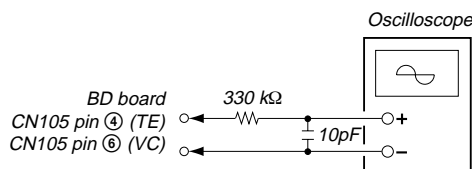
Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2(A + B)} \times 100$$

- Press the  $\text{YES}$  button and display “EF CD CHECK” (C15).
- Press the  $\text{EJECT}$  button and remove the check disc (MD) TDYS-1.

**Note 1 :** MO reading data will be erased during if a recorded disc is used in this adjustment.

**Note 2 :** If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



### 5-6-7. Focus Bias Check

Change the focus bias and check the focus tolerance amount.

#### Checking Procedure :

- Load a continuously recorded test disc (MDW-74/GA1). (Refer to “5-5. Using the Continuously Recorded Disc”.)
- Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob and display “CPLAY1 MODE”(C34).
- Press the  $\text{YES}$  button and display “CPLAY1 MID”.
- The display change to “C = 0000 AD = 00”.
- Press the  $\text{MENU/NO}$  button.
- Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob and display “FBIAS CHECK” (C16).
- Press the  $\text{YES}$  button and display “ 0000/00 c = 00”.  
The first four digits indicate the C error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value.  
Check that the C error is below 50 and ADER is below 2.
- Press the  $\text{YES}$  button and display “ 0000/00 b = 00”.  
Check that the C error is below 100 and ADER is below 2.
- Press the  $\text{YES}$  button and display “ 0000/00 a = 00”.  
Check that the C error is below 220 and ADER is below 2.
- Press the  $\text{MENU/NO}$  button, next press the  $\text{EJECT}$  button, and remove the test disc.

### 5-6-8. C PLAY Check

#### MO Error Rate Check

##### Checking Procedure :

- Load a continuously recorded test disc (MDW-74/GA1). (Refer to “5-5. Using the Continuously Recorded Disc”.)
- Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob and display “CPLAY1 MODE” (C34).
- Press the  $\text{YES}$  button and display “CPLAY1 MID”.
- The display changes to “C = 0000 AD = 00”.
- If the C error rate is below 50, check that ADER is 00.
- Press the  $\text{MENU/NO}$  button, stop playback, press the  $\text{EJECT}$  button, and test disc.

### CD Error Rate Check

#### Checking Procedure :

- Load a check disc (MD) TDYS-1.
- Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob and display “CPLAY1 MODE” (C34).
- Press the  $\text{YES}$  button twice and display “CPLAY1 MID”.
- The display changes to “C = 0000 AD = 00”.
- Check that the C error rate is below 50.
- Press the  $\text{MENU/NO}$  button, stop playback, press the  $\text{EJECT}$  button, and the test disc.

### 5-6-9. Self-Recording/playback Check

Prepare a continuous recording disc using the unit to be repaired and check the error rate.

#### Checking Procedure :

- Insert a recordable test disc (MDW-74/GA1) into the unit.
- Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob to display “CREC 1MODE” (C35).
- Press the  $\text{YES}$  button to display the “CREC1 MID”.
- When recording starts, “ **REC** ” is displayed, this becomes “CREC 1 (@ @ @ @)” (@ @ @ @ is the address), and recording starts.
- About 1 minute later, press the  $\text{MENU/NO}$  button to stop continuous recording.
- Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob to display “CPLAY1MODE” (C34).
- Press the  $\text{YES}$  button to display “C PLAY 1MID”.
- “C = 0000 AD = 00” will be displayed.
- Check that the C error becomes below 50 and the AD error below 2.
- Press the  $\text{MENU/NO}$  button to stop playback, and press the  $\text{EJECT}$  button and remove the disc.

### 5-7. INITIAL SETTING OF ADJUSTMENT VALUE

#### Note:

Mode which sets the adjustment results recorded in the non-volatile memory to the initial setting value. However the results of the temperature compensation offset adjustment will not change to the initial setting value.

If initial setting is performed, perform all adjustments again excluding the temperature compensation offset adjustment.

For details of the initial setting, refer to “5-4. Precautions on Adjustments” and execute the initial setting before the adjustment as required.

#### Setting Procedure :

- Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob to display “ADJ CLEAR” (C28).
- Press the  $\text{YES}$  button. “Complete!” will be displayed momentarily and initial setting will be executed, after which “ADJ CLEAR” (C28) will be displayed.

## 5-8. RECORDING AND DISPLAYING THE Iop INFORMATION

The Iop data can be recorded in the non-volatile memory. The Iop value on the label of the optical pick-up and the Iop value after the adjustment will be recorded. Recording these data eliminates the need to read the label on the optical pick-up.

### Recording Procedure :

1. While pressing the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob and  $\blacksquare$  button, connect the power plug to the outlet, and release the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob and  $\blacksquare$  button.
2. Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob to display "[Service]", and press the  $\text{YES}$  button.
3. Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob to display "Iop Write" (C05), and press the  $\text{YES}$  button.
4. The display becomes Ref=@@.@ (@ is an arbitrary number) and the numbers which can be changed will blink.
5. Input the Iop value written on the optical pick-up.  
To select the number : Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob.  
To select the digit : Press the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob
6. When the  $\text{YES}$  button is pressed, the display becomes "Measu=@@.@." (@ is an arbitrary number).
7. As the adjustment results are recorded for the 6 value. Leave it as it is and press the  $\text{YES}$  button.
8. "Complete!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write" (C05).

### Display Procedure :

1. Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob to display "Iop Read" (C26).
2. "@@.@/##.#" is displayed and the recorded contents are displayed.  
@@.@ indicates the Iop value labeled on the pick-up.  
##.# indicates the Iop value after adjustment
3. To end, press the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  button or  $\text{MENU/NO}$  button to display "Iop Read" (C26).

## 5-9. TEMPERATURE COMPENSATION OFFSET ADJUSTMENT

Save the temperature data at that time in the non-volatile memory as 25 °C reference data.

### Note :

1. Usually, do not perform this adjustment.
2. Perform this adjustment in an ambient temperature of 22 °C to 28 °C. Perform it immediately after the power is turned on when the internal temperature of the unit is the same as the ambient temperature of 22 °C to 28 °C.
3. When D101 has been replaced, perform this adjustment after the temperature of this part has become the ambient temperature.

### Adjusting Procedure :

1. Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob and display "TEMP ADJUS" (C03).
2. Press the  $\text{YES}$  button.
3. "TEMP = 00 [OK]" and the current temperature data will be displayed.
4. To save the data, press the  $\text{YES}$  button.  
When not saving the data, press the  $\text{MENU/NO}$  button.
5. When the  $\text{YES}$  button is pressed, "TEMP = 00 SAVE" will be displayed and turned back to "TEMP ADJUS" (C03) display then. When the  $\text{MENU/NO}$  button is pressed, "TEMP ADJUS" (C03) will be displayed immediately.

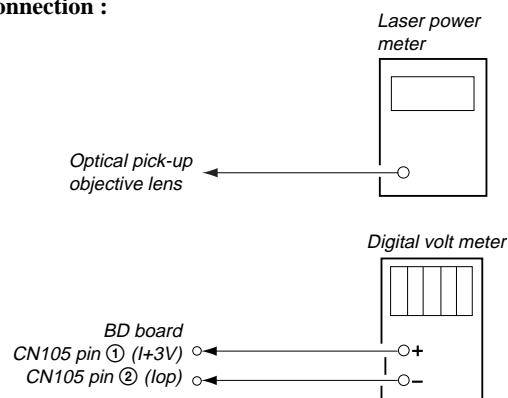
### Specified Value :

The "TEMP = 00" should be within "E0 - EF", "F0 - FF", "00 - 0F", "10 - 1F" and "20 - 2F".

## 5-10. LASER POWER ADJUSTMENT

Check the Iop value of the optical pick-up before adjustments. (Refer to 5-8. Recording and Displaying Iop Information.)

### Connection :



### Adjusting Procedure :

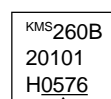
1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly, press the  $\llcorner \llcorner$  button or  $\gg \gg$  button to move the optical pick-up.)  
Connect the digital volt meter to CN105 pin ① (I+3V) and CN105 pin ② (Iop).
  2. Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob and display "LDPWR ADJUS" (C04).  
(Laser power : For adjustment)
  3. Press the  $\text{YES}$  button once and display "L 0.93 mW \$ 00".
  4. Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob so that the reading of the laser power meter becomes the specified value. Press the  $\text{YES}$  button after setting the range knob of the laser power meter, and save the adjustment results. ("L SAVE \$ 00" will be displayed for a moment.)
  5. Then "L 7.25 mW \$ 00" will be displayed.
  6. Rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob so that the reading of the laser power meter becomes the specified value, press the  $\text{YES}$  button and save it.
- Note :** Do not perform the emission with 7.25 mW more than 15 seconds continuously.
7. Then, rotate the  $\llcorner \llcorner \text{AMS} \gg \gg \lrcorner$  knob and display "LDPWR CHECK" (C13).
  8. Press the  $\text{YES}$  button once and display "L 0.93 mW \$ 00".  
Check that the reading of the laser power meter become the specified value.
  9. Press the  $\text{YES}$  button once more and display "L 7.25 mW \$ 00".  
Check that the reading the laser power meter and digital volt meter satisfy the specified value.  
Note down the digital voltmeter reading value.

### Specified Value :

Laser power meter reading : L 0.93mW : 0.85-0.91mW (260B)  
0.90-0.96mW (260E)  
L 7.25mW : 6.90-7.10mW (260B)  
7.20-7.30mW (260E)

Digital voltmeter reading : Optical pick-up displayed value  $\pm 10\%$

### (Optical pick-up label)



(For details of the method for checking this value, refer to "5-8. Recording and Displaying Iop Information".)

Iop = 57.6 mA in this case  
Iop (mA) = Digital voltmeter reading (mV)/1 ( $\Omega$ )

10. Press the **MENU/NO** button and display "LDPWR CHECK" and stop the laser emission.  
(The **MENU/NO** button is effective at all times to stop the laser emission.)
11. Rotate the **◀AMS▶** knob to display "Iop Write" (C05).
12. Press the **YES** button. When the display becomes Ref = @ @ @ .@ (@ is an arbitrary number), press the **YES** button to display "Measu=@ @ @ .@" (@ is an arbitrary number).
13. The numbers which can be changed will blink. Input the Iop value noted down at step 9.  
To select the number : Rotate the **◀AMS▶** knob.  
To select the digit : Press the **◀AMS▶** knob
14. When the **YES** button is pressed, "Complete!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write" (C05).

**Note 1:** After step 9, each time the **YES** button is pressed, the display will be switched between "L 0.73 mW \$ @@", "L 6.40 mW \$ @@", and "L Wp ホセ イ \$ @@" . Nothing needs to be performed here.

### 5-11. Iop NV SAVE

Write the reference values in the nonvolatile memory to perform "Iop compare". As this involves rewriting the reference values, do not perform this procedure except when adjusting the laser power during replacement of the OP and when replacing the IC701. Otherwise the OP check may deteriorate.

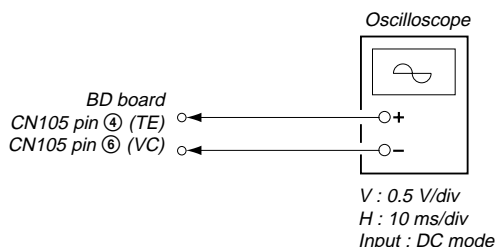
**Note:** Perform this function with the optical pick-up set at room temperature.

#### Procedure

1. Rotate the **◀AMS▶** knob to display "Iop NV Save" (C06).
2. Press the **YES** button and display "Iop [stop]" .
3. After the display changes to "Iop =xxsave?", press the **YES** button.
4. After "Complete!" is displayed momentarily, the display changes to "Iop 7.0 mW" .
5. After the display changes to "Iop=yysave?", press the **YES** button.
6. When "Complete!" is displayed, it means that Iop NV saving has been completed.

### 5-12. TRAVERSE ADJUSTMENT

#### Connection :

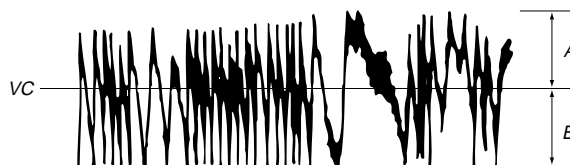


#### Adjusting Procedure :

1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) of the BD board.
2. Load a test disc (MDW-74/GA1). (Refer to Note 1.)
3. Press the **▶▶** button and move the optical pick-up outside the pit.
4. Rotate the **◀AMS▶** knob and display "EF MO ADJUS" (C07).
5. Press the **YES** button and display "EFB = @ @ MO-R".  
(Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)

6. Rotate the **◀AMS▶** knob so that the waveform of the oscilloscope becomes the specified value.  
(When the **◀AMS▶** knob is rotated, the @ of "EFB = @@" changes and the waveform changes.) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.  
(Read power traverse adjustment)

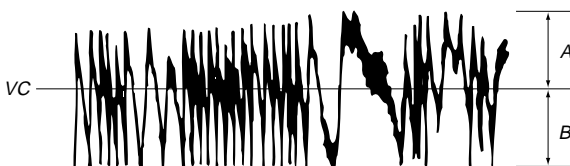
(Traverse Waveform)



Specification A = B

7. Press the **YES** button and save the result of adjustment to the non-volatile memory ("EFB = @ @ SAVE" will be displayed for a moment. Then "EFB = @ @ MO-W" will be displayed).
8. Rotate the **◀AMS▶** knob so that the waveform of the oscilloscope becomes the specified value.  
(When the **◀AMS▶** knob is rotated, the @ of "EFB = @ @ MO-W" changes and the waveform changes.) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.  
(Write power traverse adjustment)

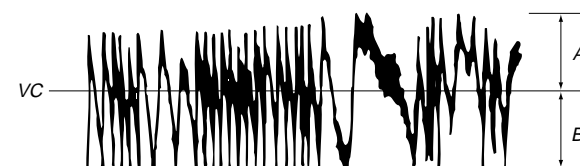
(Traverse Waveform)



Specification A = B

9. Press the **YES** button, and save the adjustment results in the non-volatile memory. ("EFB = @ @ SAVE" will be displayed for a moment.)
10. "EFB = @ @ MO-P". will be displayed.  
The optical pick-up moves to the pit area automatically and servo is imposed.
11. Rotate the **◀AMS▶** knob until the waveform of the oscilloscope moves closer to the specified value.  
In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

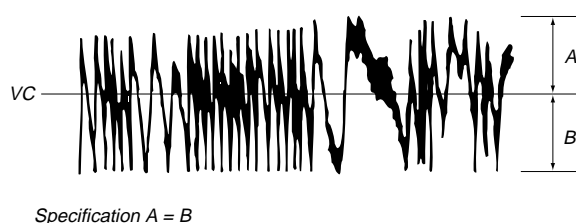
(Traverse Waveform)



Specification A = B

12. Press the **[YES]** button, and save the adjustment results in the non-volatile memory. ("EFB = 00 SAVE" will be displayed for a moment.)  
Next "EF MO ADJUS" (C07) is displayed. The disc stops rotating automatically.
13. Press the **[EJECT]** button and remove the disc.
14. Load the check disc (MD) TDYS-1.
15. Rotate the **[<<AMS>>]** knob and display "EF CD ADJUS" (C08).
16. Press the **[YES]** button and display "EFB = 00 CD". Servo is imposed automatically.
17. Rotate the **[<<AMS>>]** knob so that the waveform of the oscilloscope moves closer to the specified value.  
In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

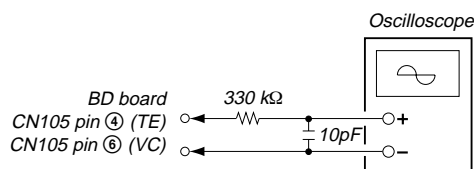
(Traverse Waveform)



18. Press the **[YES]** button, display "EFB = 00 SAVE" for a moment and save the adjustment results in the non-volatile memory. Next "EF CD ADJUS" (C08) will be displayed.
19. Press the **[EJECT]** button and remove the check disc (MD) TDYS-1.

**Note 1 :** MO reading data will be erased during if a recorded disc is used in this adjustment.

**Note 2 :** If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



### 5-13. FOCUS BIAS ADJUSTMENT

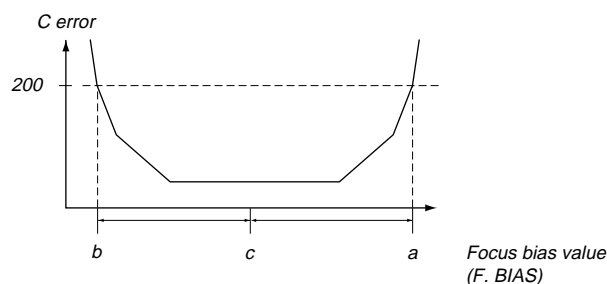
#### Adjusting Procedure :

1. Load a test disk (MDW-74/GA1).
2. Rotate the **[<<AMS>>]** knob and display "CPLAY1 MODE" (C34).
3. Press the **[YES]** button and display "CPLAY1 MID".
4. The display change to "C = 0000 AD = 00".
5. Press the **[MENU/NO]** button.
6. Rotate the **[<<AMS>>]** knob and display "FBIAS ADJUS" (C09).
7. Press the **[YES]** button and display "0000/00 a = 00".  
The first four digits indicate the C error rate, the two digits after [/] indicate ADER, and the 2 digits after [a =] indicate the focus bias value.
8. Rotate the **[<<AMS>>]** knob in the clockwise direction and find the focus bias value at which the C error rate becomes 200 (Refer to Note 2).
9. Press the **[YES]** button and display "0000/00 b = 00".
10. Rotate the **[<<AMS>>]** knob in the counterclockwise direction and find the focus bias value at which the C error rate becomes 200.

11. Press the **[YES]** button and display "0000/00 c = 00".
12. Check that the C error rate is below 50 and ADER is 2. Then press the **[YES]** button.
13. If the "(00)" in "00 - 00 - 00 (00)" is above 20, press the **[YES]** button.  
If below 20, press the **[MENU/NO]** button and repeat the adjustment from step 2.
14. Press the **[EJECT]** button to remove the test disc.

**Note 1 :** The relation between the C error and focus bias is as shown in the following figure. Find points a and b in the following figure using the above adjustment. The focal point position C is automatically calculated from points a and b.

**Note 2 :** As the C error rate changes, perform the adjustment using the average value.



### 5-14. ERROR RATE CHECK

#### 5-14-1. CD Error Rate Check

##### Checking Procedure :

1. Load a check disc (MD) TDYS-1.
2. Rotate the **[<<AMS>>]** knob and display "CPLAY1 MODE" (C34).
3. Press the **[YES]** button twice and display "CPLAY1 MID".
4. The display changes to "C = 0000 AD = 00".
5. Check that the C error rate is below 50.
6. Press the **[MENU/NO]** button, stop playback, press the **[EJECT]** button, and remove the test disc.

#### 5-14-2. MO Error Rate Check

##### Checking Procedure :

1. Load a continuously recorded test disc (MDW-74/GA1).  
(Refer to "5-5. Using the Continuously Recorded Disc".)
2. Rotate the **[<<AMS>>]** knob and display "CPLAY1 MODE" (C34).
3. Press the **[YES]** button and display "CPLAY1 MID".
4. The display changes to "C = 0000 AD = 00".
5. If the C error rate is below 50, check that ADER is 2.
6. Press the **[MENU/NO]** button, stop playback, press the **[EJECT]** button, and remove the test disc.



### 5-15. FOCUS BIAS CHECK

Change the focus bias and check the focus tolerance amount.

#### Checking Procedure :

1. Load a continuously recorded test disc (MDW-74/GA1).  
(Refer to "5-5. Using the Continuously Recorded Disc".)
2. Rotate the **◀◀ AMS ▶▶** knob and display "CPLAY 1MODE" (C34).
3. Press the **[YES]** button twice and display "CPLAY1 MID".
4. The display change to "C = 0000 AD = 00".
5. Press the **[MENU/NO]** button.
6. Rotate the **◀◀ AMS ▶▶** knob and display "FBIAS CHECK" (C16).
7. Press the **[YES]** button and display "0000/00 c = 00".  
The first four digits indicate the C error rate, the two digits after [/] indicate ADR, and the 2 digits after [c =] indicate the focus bias value.  
Check that the C error is below 50 and ADER is below 2.
8. Press the **[YES]** button and display "0000/00 b = 00".  
Check that the C error is below 100 and ADER is below 2.
9. Press the **[YES]** button and display "0000/00 a = 00".  
Check that the C error is below 100 and ADER is below 2.
10. Press the **[MENU/NO]** button, next press the **[EJECT]** button, and remove the continuously recorded disc.

**Note 1 :** If the C error and ADER are above other than the specified value at points a (step 9. in the above) or b (step 8. in the above), the focus bias adjustment may not have been carried out properly. Adjust perform the beginning again.

### 5-16. AUTO GAIN CONTROL OUTPUT LEVEL ADJUSTMENT

Be sure to perform this adjustment when the Optical pick-up is replaced.

If the adjustment results becomes "Adjust NG!", the Optical pick-up may be faulty or the servo system circuits may be abnormal.

#### 5-16-1. CD Auto Gain Control Output Level Adjustment

##### Adjusting Procedure :

1. Insert the check disc (MD) TDYS-1.
2. Rotate the **◀◀ AMS ▶▶** knob to display "AG Set (CD)" (C11).
3. When the **[YES]** button is pressed, the adjustment will be performed automatically.  
"Complete!" will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to "AG Set (CD)" (C11).
4. Press the **[EJECT]** button to remove the disc.

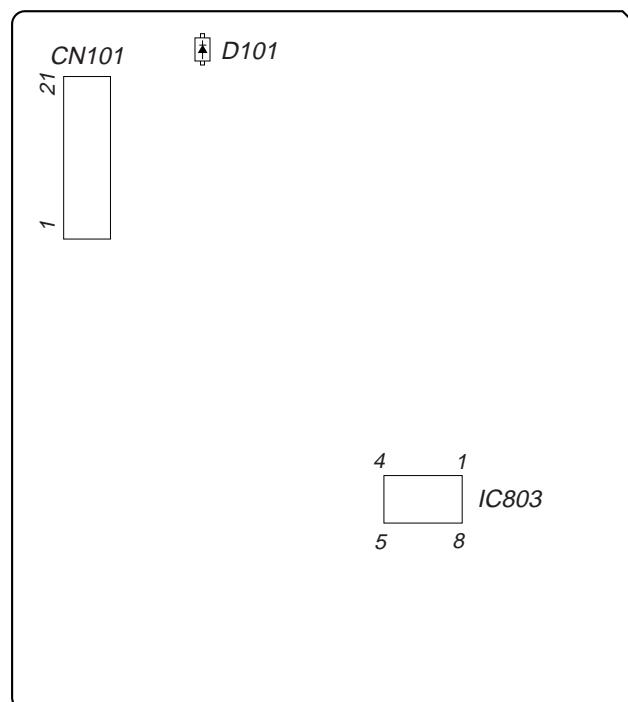
#### 5-16-2. MO Auto Gain Control Output Level Adjustment

##### Adjusting Procedure :

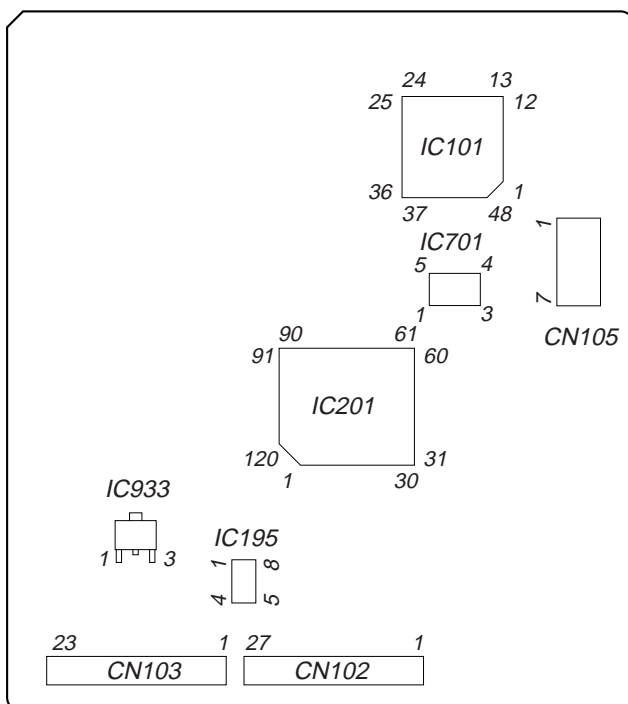
1. Insert the reference disc (MDW-74/GA-1) for recording.
2. Rotate the **◀◀ AMS ▶▶** knob to display "AG Set (MO)" (C10).
3. When the **[YES]** button is pressed, the adjustment will be performed automatically.  
"Complete!" will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to "AG Set (MO)" (C10).
4. Press the **[EJECT]** button to remove the disc.

### 5-17. ADJUSTING POINTS AND CONNECTING POINTS

#### [BD BOARD] (SIDE A)



#### [BD BOARD] (SIDE B)



**NOTE:** It is useful to use the jig. for checking the waveform. (Refer to Servicing Note on page 6.)



## SECTION 6 DIAGRAMS

### 6-1. IC PIN DESCRIPTIONS

#### • IC101 CXA2523AR (RF AMP/FOCUS, TRACKING ERROR AMP) (BD BOARD)

Pin No.	Pin Name	I/O	Description
1	I	I	I-V converted RF signal I input
2	J	I	I-V converted RF signal J input
3	VC	O	Middle point voltage generation output
4 to 9	A to F	I	Signal input from the optical pick-up detector
10	PD	I	Light amount monitor signal input
11	APC	O	Laser APC signal output
12	APCREF	I	Reference voltage input for setting laser power
13	GND	—	Ground
14	TEMPI	I	Temperature sensor connection
15	TEMPR	O	Reference voltage output for the temperature sensor
16	SWDT	I	Serial data signal input from the CXD2664R (IC201)
17	SCLK	I	Serial clock signal input from the CXD2664R (IC201)
18	XLAT	I	Latch signal input from the CXD2664R (IC201) “L”: Latch
19	XSTBY	I	Stand by signal input (Fixed at “H”).)
20	FOCNT	I	Center frequency control voltage input of BPF22, BPF3T, EQ from the CXD2664R (IC201)
21	VREF	O	Reference voltage output (Not used in this set.)
22	EQADJ	I	Center frequency setting pin for the internal circuit EQ
23	3TADJ	I	Center frequency setting pin for the internal circuit BPF3T
24	VCC	—	Power supply pin (+3.3 V)
25	WBLADJ	I	Center frequency setting pin for the internal circuit BPF22
26	TE	O	Tracking error signal output to the CXD2664R (IC201)
27	CSLED	—	External capacitor connection pin for the sled error signal LPF
28	SE	O	Sled error signal output to the CXD2664R (IC201)
29	ADFM	O	FM signal output of ADIP
30	ADIN	I	ADIP signal comparator input ADFM is connected with AC coupling
31	ADAGC	—	External capacitor connection pin for AGC of ADIP
32	ADFG	O	ADIP duplex signal output to the CXD2664R (IC201)
33	AUX	O	I3 signal/temperature signal output to the CXD2664R (IC201)
34	FE	O	Focus error signal output to the CXD2664R (IC201)
35	ABCD	O	Light amount signal output to the CXD2664R (IC201)
36	BOTM	O	RF/ABCD bottom hold signal output to the CXD2664R (IC201)
37	PEAK	O	RF/ABCD peak hold signal output to the CXD2664R (IC201)
38	RF	O	RF equalizer signal output to the CXD2664R (IC201)
39	RFAGC	—	External capacitor connection pin for the RF AGC circuit
40	AGCI	I	The RF amplifier output is input with AC coupling
41	COMPO	O	User comparator output (Not used in this set.)
42	COMPP	I	User comparator input (Fixed at “L”).)
43	ADDC	—	External capacitor pin for cutting the low band of the ADIP amplifier
44	OPO	O	User operation amplifier output (Not used in this set.)
45	OPN	I	User operation amplifier inversion input (Fixed at “L”).)
46	RFO	O	RF amplifier signal output
47	MORFI	I	Groove RF signal is input with AC coupling
48	MORFO	O	Groove RF signal output

- Abbreviation
- APC: Auto Power Control
- AGC: Auto Gain Control

## • IC201 CXD2664R (DIGITAL SERVO SIGNAL PROCESSOR/DIGITAL SIGNAL PROCESSOR) (BD BOARD)

Pin No.	Pin Name	I/O	Description
1	MNT0 (FOK)	O	Not used. (open)
2	MNT1 (SHCK)	O	Track jump detection signal output to the system control
3	MNT2 (XBUSY)	O	In the state of executire command signal output
4	MNT3 (SLOC)	O	Not used. (open)
5	VDC0	—	Power supply pin (+2.6 V)
6	SWDT	I	Serial data signal input from the system control
7	SCLK	I	Serial clock signal input from the system control
8	XLAT	I	Serial latch signal input from the system control
9	VSC0	—	Ground pin
10	SRDT	O (3)	Serial reading data signal output to the system control
11	SENS	O (3)	Internal status (SENSE) output to the system control
12	XRST	I	Reset signal input from the system control “L”: Reset
13	SQSY	O	Subcode Q sync (SCOR) signal output to the system control
14	DQSY	O	Digital In U-bit CD format or MD format subcode Q sync (SCOR) signal output to the system control
15	RPWR	I	Laser power switching signal input from the system control “H”: Recording, “L”: Playback
16	XINT	O	Interrupt status signal output to the system control
17	XT	O	Recording data signal output enable input from the system control
18	VDIO0	—	Power supply pin (+3.3 V)
19	OSCI	I	System clock signal input (Fixed at “L”.)
20	OSCO	I/O	System clock signal input (Input terminal during OSCN:“H” )
21	OSCN	I	Internal oscillating circuit control signal input
22	VSIO0	—	Ground pin
23	XTSL	I	System clock frequency setting (Fixed at “H”.)
24	DIN0	I	Digital audio signal input (Optical input)
25	DIN1	I	Digital audio signal input (USB input)
26	DOUT	O	Digital audio signal output (Optical output)
27	DATAI	I	Serial data signal input
28	LRCKI	I	LR clock signal input
29	XBCKI	I	Serial data bit clock signal input
30	VDC1	—	Power supply pin (+2.6 V)
31	VSC1	—	Ground pin
32	ADDT	I	Data input from the A/D converter
33	DADT	O	Data output to the D/A converter
34	LRCK	O	LR clock signal output for the A/D and D/A converter
35	XBCK	O	Bit clock signal output to the A/D and D/A converter
36	FS256	O	256Fs clock signal output (Not used.)
37	XWE	O	Write enable signal output for DRAM
38	XOE	O	Read enable signal output for DRAM
39	DRVDD0	—	Power supply pin (+3.3 V)
40	DRVSS0	—	Ground pin
41	A11	O	DRAM address output (Not used.) (Open)
42	D3	I/O	Data input/output for DRAM
43	D0	I/O	
44	D2	I/O	
45	D1	I/O	

\* O (3) for 3-state output in the column I/O

Pin No.	Pin Name	I/O	Description
46	XCAS	O	CAS signal output for DRAM
47	XRAS	O	RAS signal output for DRAM
48	A09	O	DRAM address output
49	A08	O	
50	A10	O	Not used. (Open)
51	A07	O	DRAM address output
52	A00	O	
53	A06	O	
54	A01	O	
55	A05	O	
56	A02	O	
57	VDC2	—	Power supply pin (+2.6 V)
58	VSC2	—	Ground pin
59	A04	O	DRAM address output
60	A03	O	DRAM address output
61	DRVDD1	—	Power supply pin (+3.3 V)
62	DRVSS1	—	Ground pin
63	TEST0	I	Not used. (Fixed at “L”.)
64	TEST1	I	Not used. (Fixed at “H”.)
65	TEST2	I	Not used. (Open)
66	AVD1	—	Power supply pin (+3.3 V)
67	ASYO	O	Play back EFM duplex signal output
68	ASYI	I (A)	Play back EFM comparator slice level input
69	BIAS	I (A)	Play back EFM comparator bias current input
70	RFI	I (A)	Play back EFM RF signal input
71	AVS1	—	Ground pin
72	PCO	O (3)	Phase comparison output for the recording/playback EFM master PLL
73	FILI	I (A)	Filter input for the recording/playback EFM master PLL
74	FILO	O (A)	Filter output for the recording/playback EFM master PLL
75	CLTV	I (A)	Internal VCO control voltage input for the recording/playback EFM master PLL
76	PEAK	I (A)	Light amount signal peak hold input
77	BOTM	I (A)	Light amount signal bottom hold input
78	ABCD	I (A)	Light amount signal input
79	FE	I (A)	Focus error signal input from the CXA2523AR (IC101)
80	AUX1	I (A)	Auxiliary A/D input
81	VC	I (A)	Middle point voltage input from the CXA2523AR (IC101)
82	ADIO	O (A)	Monitor output of the A/D converter input signal (Not used.) (Open)
83	ADRT	I (A)	A/D converter operational range upper limit voltage input (Fixed at “H”.)
84	ADRB	I (A)	A/D converter operational range lower limit voltage input (Fixed at “L”.)
85	SE	I (A)	Sled error signal input from the CXA2523AR (IC101)
86	TE	I (A)	Tracking error signal input from the CXA2523AR (IC101)
87	AVD2	—	Power supply pin (+3.3 V)
88	AVS2	—	Ground pin

\* I (A) for analog input, O (3) for 3-state output, and O (A) for analog output in the column I/O

- Abbreviation  
 EFM: Eight to Fourteen Modulation  
 PLL : Phase Locked Loop  
 VCO: Voltage Controlled Oscillator

Pin No.	Pin Name	I/O	Description
89	DCHG	I (A)	Connected to +3 V power supply
90	APC	I	APC error signal input (Not used.) (Fixed at “H”.)
91	ADFG	I	ADIP duplex FM signal input from the CXA2523AR (IC101)
92	VDIO1	—	Power supply pin (+3.3 V)
93	VSIO1	—	Ground pin
94	F0CNT	O	Filter f0 control output to the CXA2523AR (IC101)
95	VDC3	—	Power supply pin (+2.6 V)
96	VSC3	—	Ground pin
97	XLRF	O	Control latch signal output to the CXA2523AR (IC101)
98	CLRF	O	Control clock signal output to the CXA2523AR (IC101)
99	DTRF	O	Control data signal output to the CXA2523AR (IC101)
100	APCR	O	Reference PWM output for the laser APC
101	LDDR	O	PWM output for the laser digital APC (Not used.) (Open)
102	TRDR	O	Tracking servo drive PWM output (–)
103	TFDR	O	Tracking servo drive PWM output (+)
104	FFDR	O	Focus servo drive PWM output (+)
105	FRDR	O	Focus servo drive PWM output (–)
106	FS4	O	4Fs clock signal output (Not used.) (Open)
107	SRDR	O	Sled servo drive PWM output (–)
108	SFDR	O	Sled servo drive PWM output (+)
109	SPRD	O	Spindle servo drive PWM output (–)
110	SPFD	O	Spindle servo drive PWM output (+)
111	FGIN	I	Spindle CAV servo FG signal input (Fixed at “L”.)
112 to 114	TST1 to TST3	I	Test input (Fixed at “L”.)
115	EFMO	O	EFM output when recording
116	VDIO2	—	Power supply pin (+3.3 V)
117	VSIO2	—	Ground pin
118	VDC4	—	Power supply pin (+2.6 V)
119	VSC4	—	Ground pin
120	MDDT1	I	MD data mode1 switching signal input (Fixed at “L”.)

- Abbreviation  
EFM: Eight to Fourteen Modulation

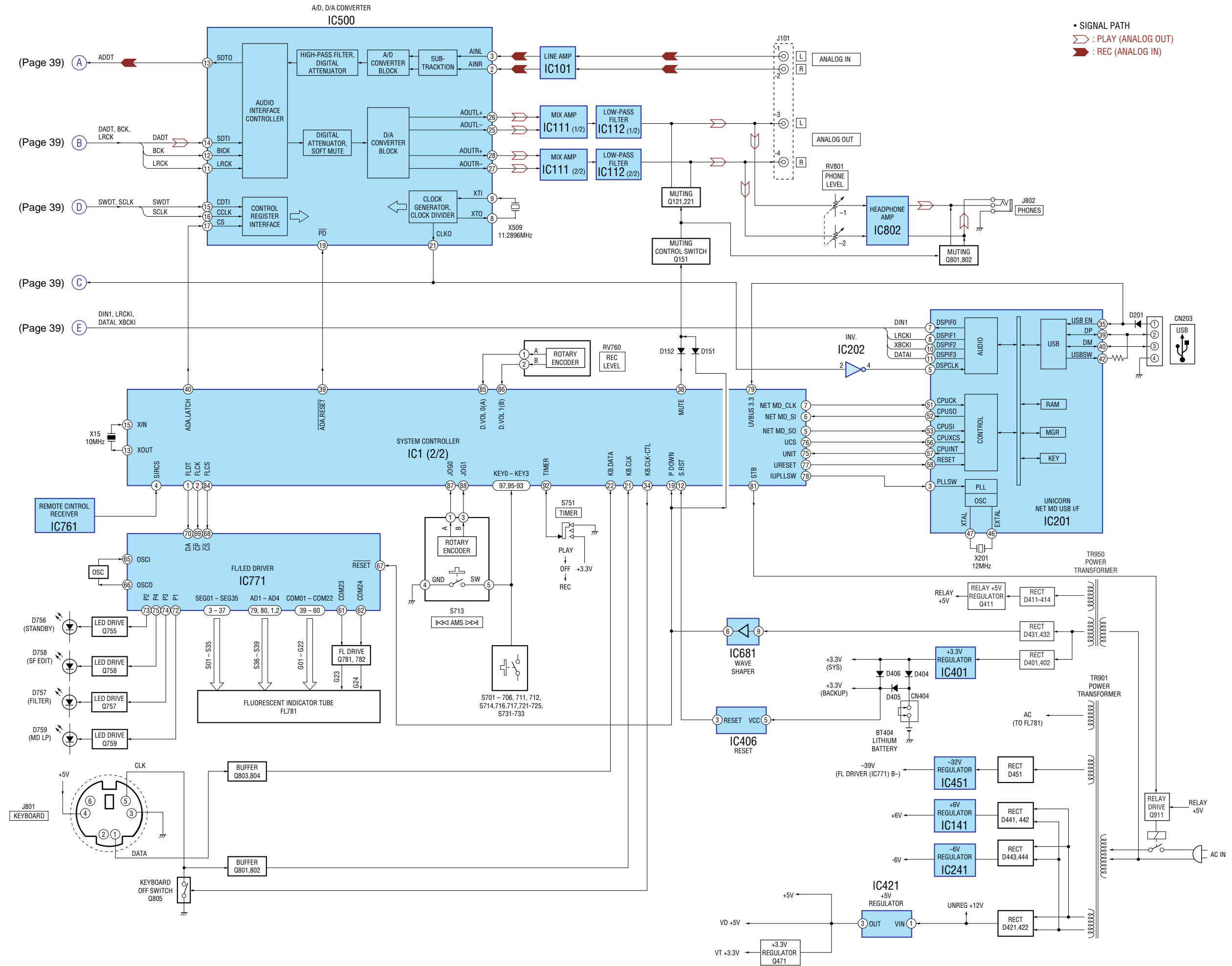
• IC1 M30823MH-052FP (SYSTEM CONTROL) (MAIN BOARD)

Pin No.	Pin Name	I/O	Description
1	FLDT	O	Serial data output to the display driver (IC771)
2	FLCK	O	Serial clock signal output to the display driver (IC771) L: Active
3	A1-IN	I	A1 Control input (Not used.) (Open)
4	SIRCS	I	Remote control signal input
5	NETMD_SO	O	Serial data output to UNICORN NETMD-USB I/F
6	NETMD_SI	I	Serial data input from UNICORN NETMD-USB I/F
7	NETMD_CLK	O	Clock signal output to UNICORN NETMD-USB I/F
8	BYTE	I	Data bus changed input (Fixed at "L".)
9	CNVSS	—	Ground pin
10	XIN-T	I	Not used. (Fixed at "L".)
11	XOUT-T	O	Not used. (Open)
12	S.RST	I	System reset signal input
13	XOUT	O	Main clock output (10 MHz)
14	GND	—	Ground pin
15	XIN	I	Main clock input (10 MHz)
16	VCC	—	Power supply pin (+3 V)
17	NMI	I	Fixed at H. (Fixed at "H".)
18	DQSY	I	Digital in sync input (Record system)
19	P.DOWN	I	Power down detection input L: Power down
20	SQSY	I	ADIP (MO) sync or subcode Q (PIT) sync input from CXD2664R (IC201) (Playback system)
21	KB.CLK	I	Keyboard clock signal input
22	KB.DATA	I	Keyboard data signal input
23	IIC BUSY	I	IIC cable connect check (Not used.) (Open)
24	A1 OUT	O	A1 control signal output (Not used.) (Open)
25	XINIT	I	Interrupt status signal input from CXD2664R (IC201)
26	*BEEP	O	Not used. (Open)
27	LRCKI	O	Not used. (Open)
28	IIC POWER	O	Not used. (Open)
29	IIC CLK	O	Not used. (Fixed at "L".)
30	IIC DATA	I/O	Not used. (Fixed at "L".)
31	SWDT	O	Writing data signal output
32	SRDT	I	Reading data signal input
33	SCLK	O	Clock signal output
34	KB.CLK-CTL	O	Keyboard clock ON/OFF signal output
35	CLIP-TX	O	Not used. (Open)
36	CLIP-RX	I	Not used. (Open)
37	XBCKI	O	Not used. (Open)
38	MUTE	O	Line out muting signal output
39	ADA.RESET	O	Reset signal output to the AK4524 (IC500)
40	ADA. LATCH	O	Latch signal output to the AK4524 (IC500)
41	EPM	I	Not used. (Fixed at "L".)
42	L : DINT1/H : CLIP	O	Not used. (Open)
43	NC	O	Not used. (Open)
44	PROTECT	I	Recording-protection claw detection input from the protection detection switch H: Protect
45	SCL	O	Clock signal output to the EEP-ROM (IC195)
46	CE	I	Not used. (Pull-up)

Pin No.	Pin Name	I/O	Description
47	EEP-WP	O	EEP-ROM write protect signal output L: write possibility
48	XBUSY	I	In the state of executive command from the CXD2664R (IC201)
49	OUT-SW	I	Detection signal input from the loading out detection switch (S103)
50	XLATCH	O	Latch signal output
51	PLAY-SW	I	Detection signal input from the playback position detection switch (S104) L: PLAY
52	DIG-RST	O	Digital rest signal output to the CXD2664R (IC201) and motor driver (IC401)
53	REC-SW	I	Detection signal input from the recording position detection switch (S105) L: REC
54	WR PWR	O	Laser power ON/OFF output
55	LIMIT-IN	I	Detection input from the limit switch (S101) L: Sled limit-In, H: Sled limit-Out
56	MOD	O	Laser modulation switching signal output
57	LDON	O	Laser ON/OFF control output
58	SENS	I	Internal status (SENSE) input from the CXD2664R (IC201)
59	SHOCK	I	Track jump signal input from the CXD2664R (IC201)
60	SDA	I/O	Serial data input/output pin with the EEPROM (IC195)
61	REFLECT	I	Disk reflection rate detection input from the reflect detection switch H: Disk with low reflection rate
62	VCC	—	Power supply pin (+3 V)
63	NC	O	Not used. (Open)
64	GND	—	Ground pin
65	LOAD LO	O	Loading motor voltage control signal output
66	LOAD OUT	O	Loading motor control signal output H: eject
67	LOAD IN	O	Loading motor control signal output H: loading
68 to 71	MODEL SEL 0 to 3	O	Not used. (Open)
72 to 74	NC	O	Not used. (Open)
75	UNIT	I	Interrupt signal input from UNICORN NETMD-USB I/F
76	UCS	O	Chip select signal output to UNICORN NETMD-USB I/F
77	URESET	O	Reset signal output to UNICORN NETMD-USB I/F
78	UPLLSW	O	PLL ON/OFF signal output to UNICORN NETMD-USB I/F
79	UVBUS3.3	I	V bus voltage input from UNICORN NETMD-USB I/F
80	SELECT	O	UNICORN optical input select signal output
81	STB	O	Strobe signal output to the power supply circuit H: Power supply ON, L: standby
82	BEEP SW	O	Not used. (Open)
83	REC	O	Not used. (Open)
84	FLCS	O	Chip select signal output to the display driver (IC771)
85, 86	D.VOL0,1	O	Recording level signal output to REC LEVEL volume switch (RV760)
87, 88	JOG0, JOG1	I	Jog dial pulse input from the rotary encoder (S713)
89	IOP	I	Optical Pick-up voltage (current) detect signal input
90	DISTINATION	I	Model discrimination
91	MODEL SEL	I	Model discrimination
92	TIMER	I	Timer select signal input from timer select switch (S751)
93 to 95	KEY3 to 1	I	Key input pin (A/D input)
96	AVSS	—	Ground pin
97	KEY0	I	Key input pin (A/D input)
98	VREF	I	A/D reference voltage (Fixed at “H”.)
99	AVCC	—	Power supply pin (+3 V)
100	NC	I	Not used. (Fixed at “L”.)



### 6-3. BLOCK DIAGRAM — MAIN SECTION —





**THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.**  
(In addition to this, the necessary note is printed in each block.)

**For schematic diagrams.**

**Note:**

- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\text{F}$  50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $1/4\text{ W}$  or less unless otherwise specified.
- $\triangle$  : internal component.
- $\square$  : panel designation.

**Note:**  
The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety.  
Replace only with part number specified.

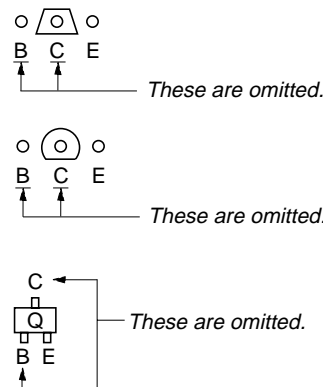
- — : B+ Line.
- --- : B- Line.
- □ : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- no mark : STOP
- ( ) : PLAY
- < > : REC
- \* : Impossible to measure
- Voltages are taken with a VOM (Input impedance  $10\text{ M}\Omega$ ).  
Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope.  
Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.  
▶ : PB  
▶▶ : REC  
▶▶▶ : REC (DIGITAL IN)  
▶▶▶▶ : PLAY (DIGITAL OUT)

**For printed wiring boards.**

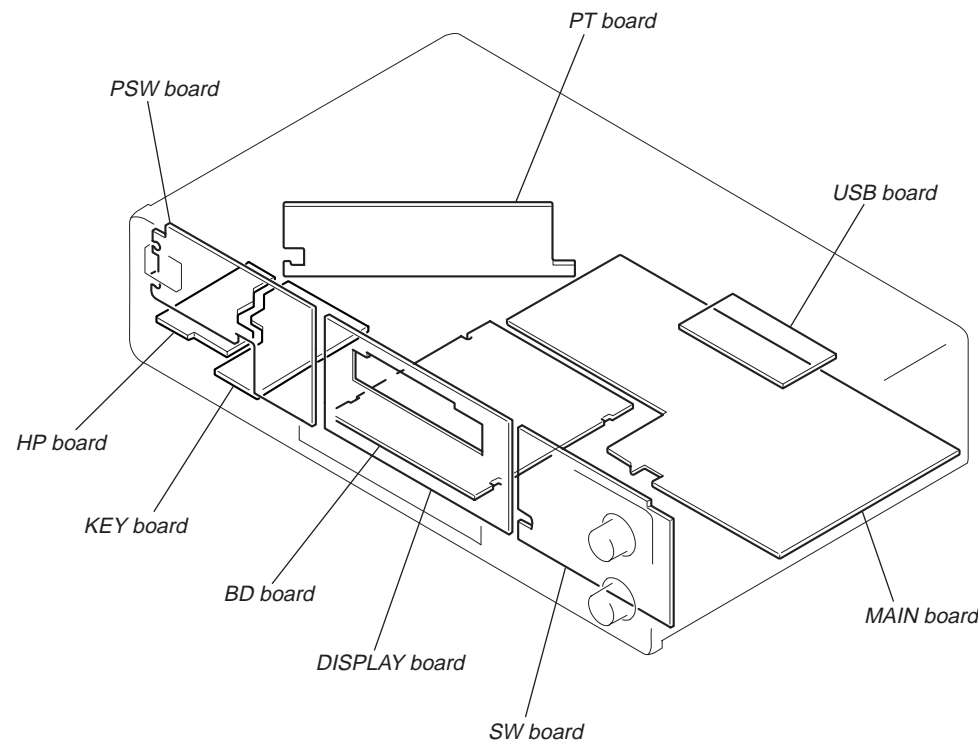
**Note:**

- $\circ$  : parts extracted from the component side.
- $\square$  : parts extracted from the conductor side.
- $\circ$  : Through hole.
- : Pattern from the side which enables seeing.  
(The other layers' patterns are not indicated.)

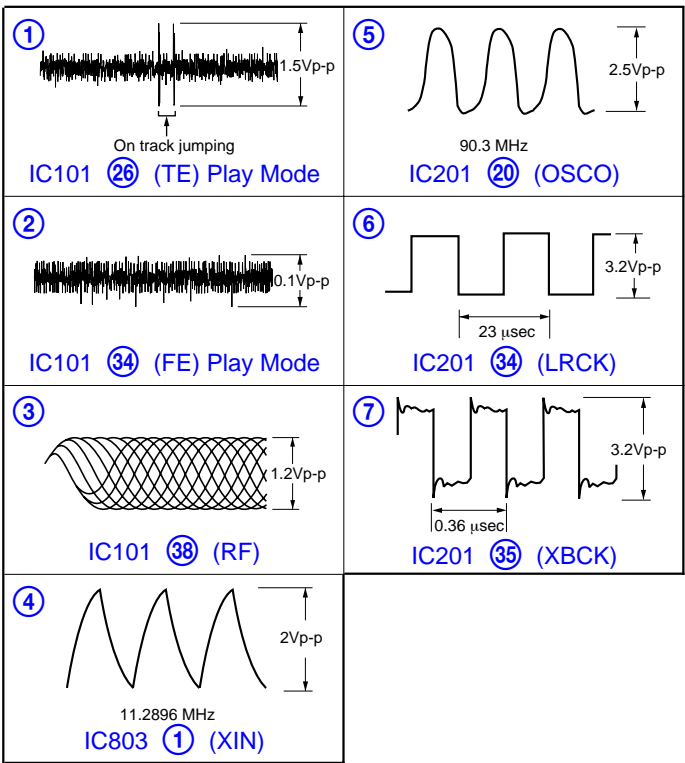
**Caution:**  
Pattern face side: Parts on the pattern face side seen from the (Side B) pattern face are indicated.  
Parts face side: Parts on the parts face side seen from the (Side A) parts face are indicated.



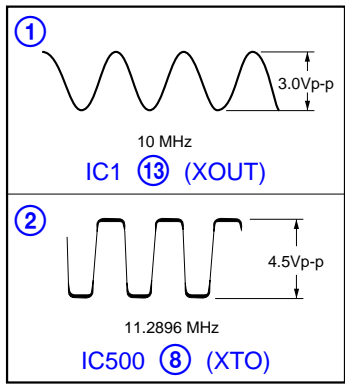
**6-4. CIRCUIT BOARDS LOCATION**



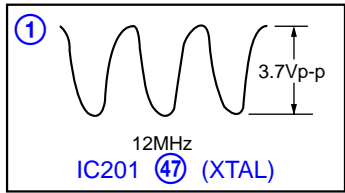
**• Waveforms**  
**– BD Board –**



**– MAIN Board –**

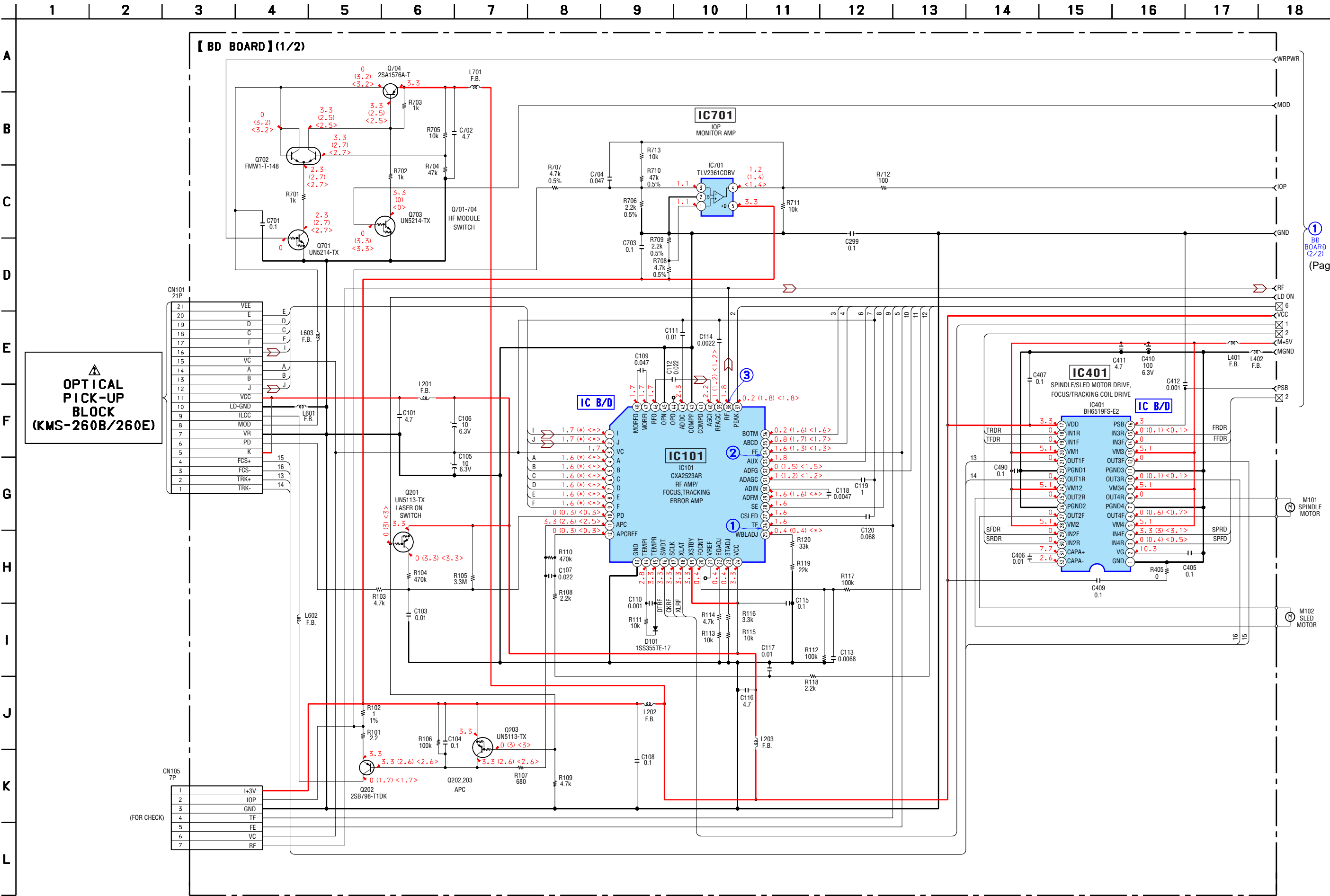


**– USB Board –**



6-5. SCHEMATIC DIAGRAM — BD SECTION (1/2) —

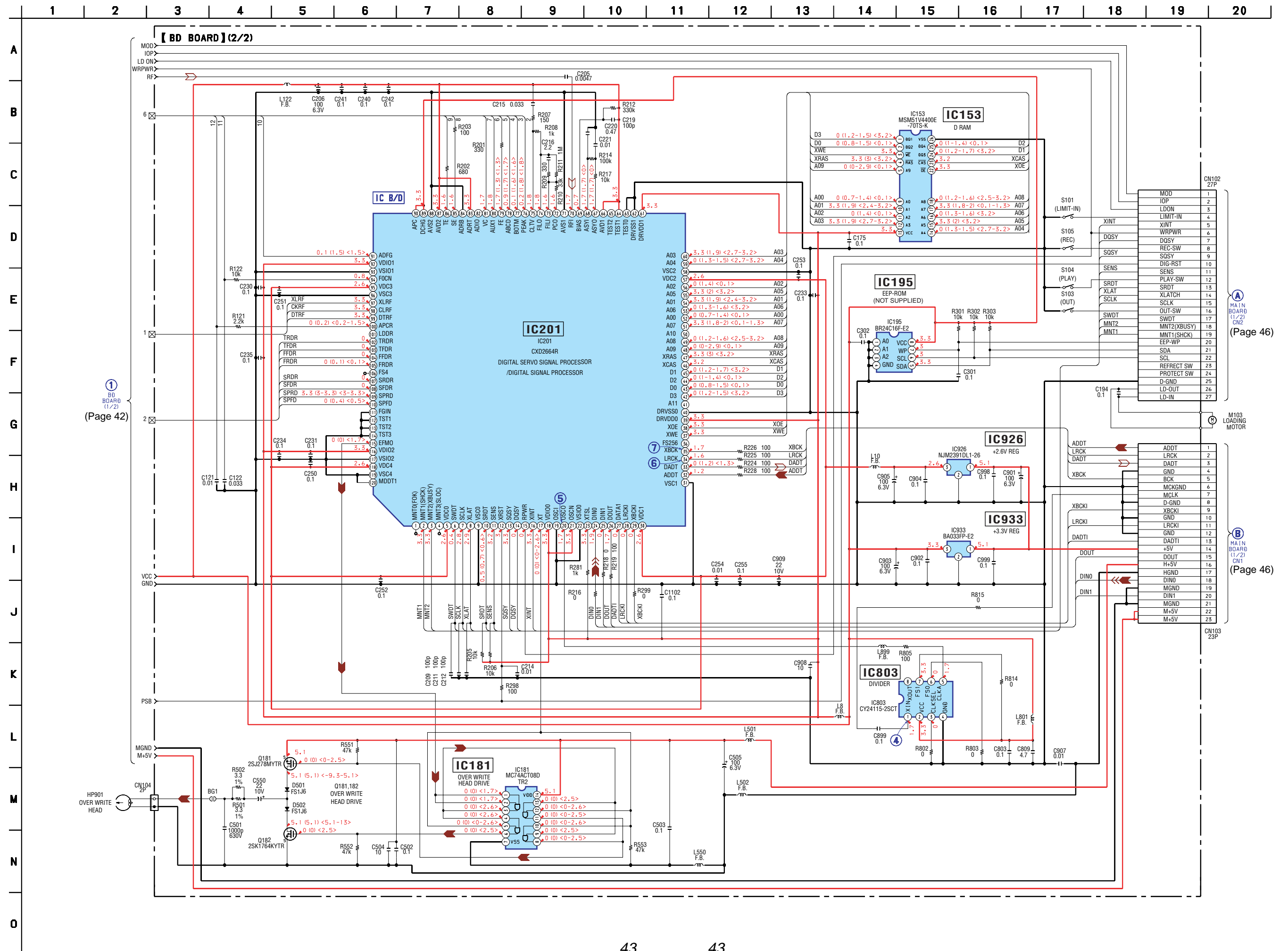
- Refer to page 41 for Waveforms.
- Refer to page 54 for IC Block Diagrams.



BD BOARD (2/2)  
(Page 43)

6-6. SCHEMATIC DIAGRAM — BD SECTION (2/2) —

• Refer to page 41 for Waveforms.  
• Refer to page 54 for IC Block Diagram.



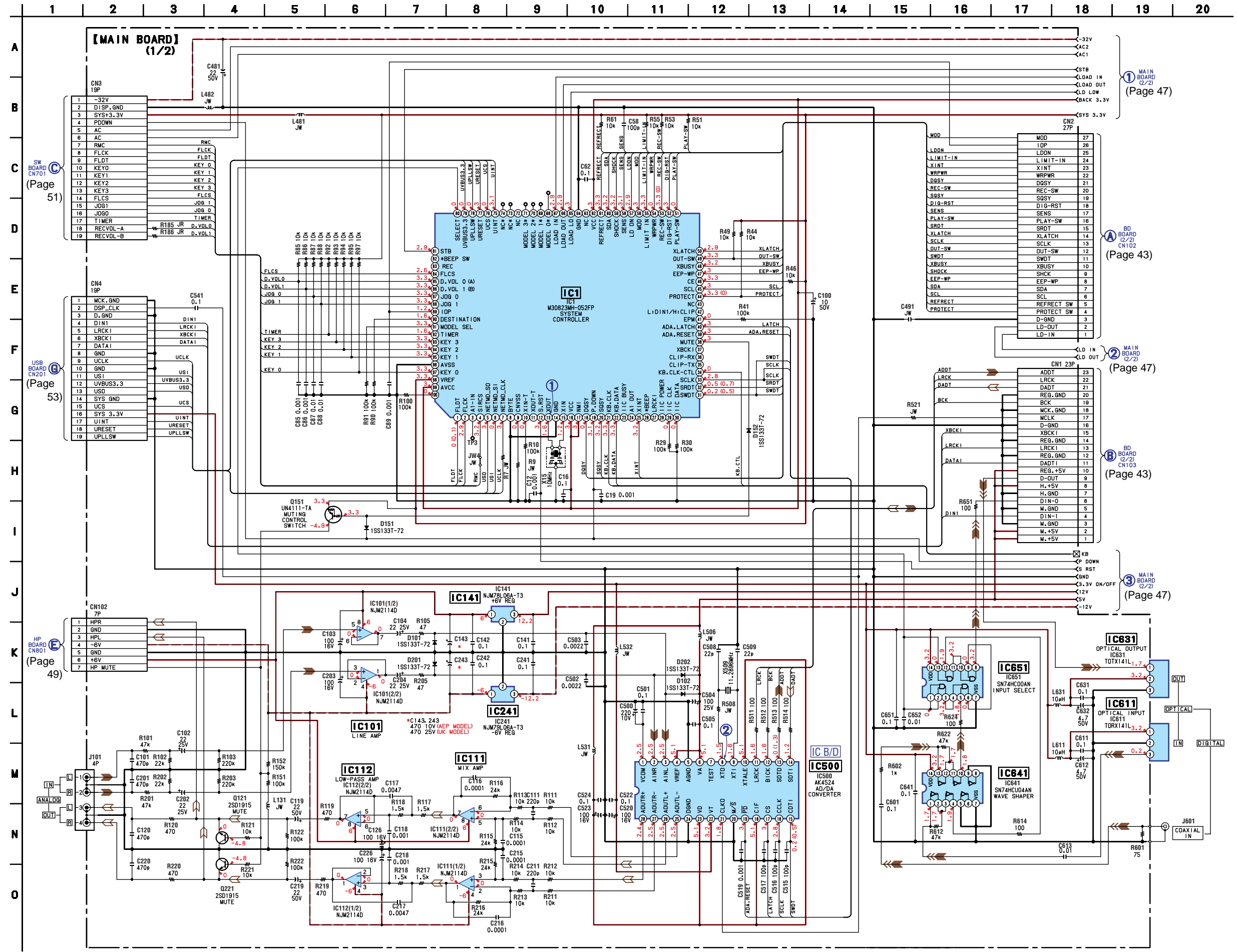






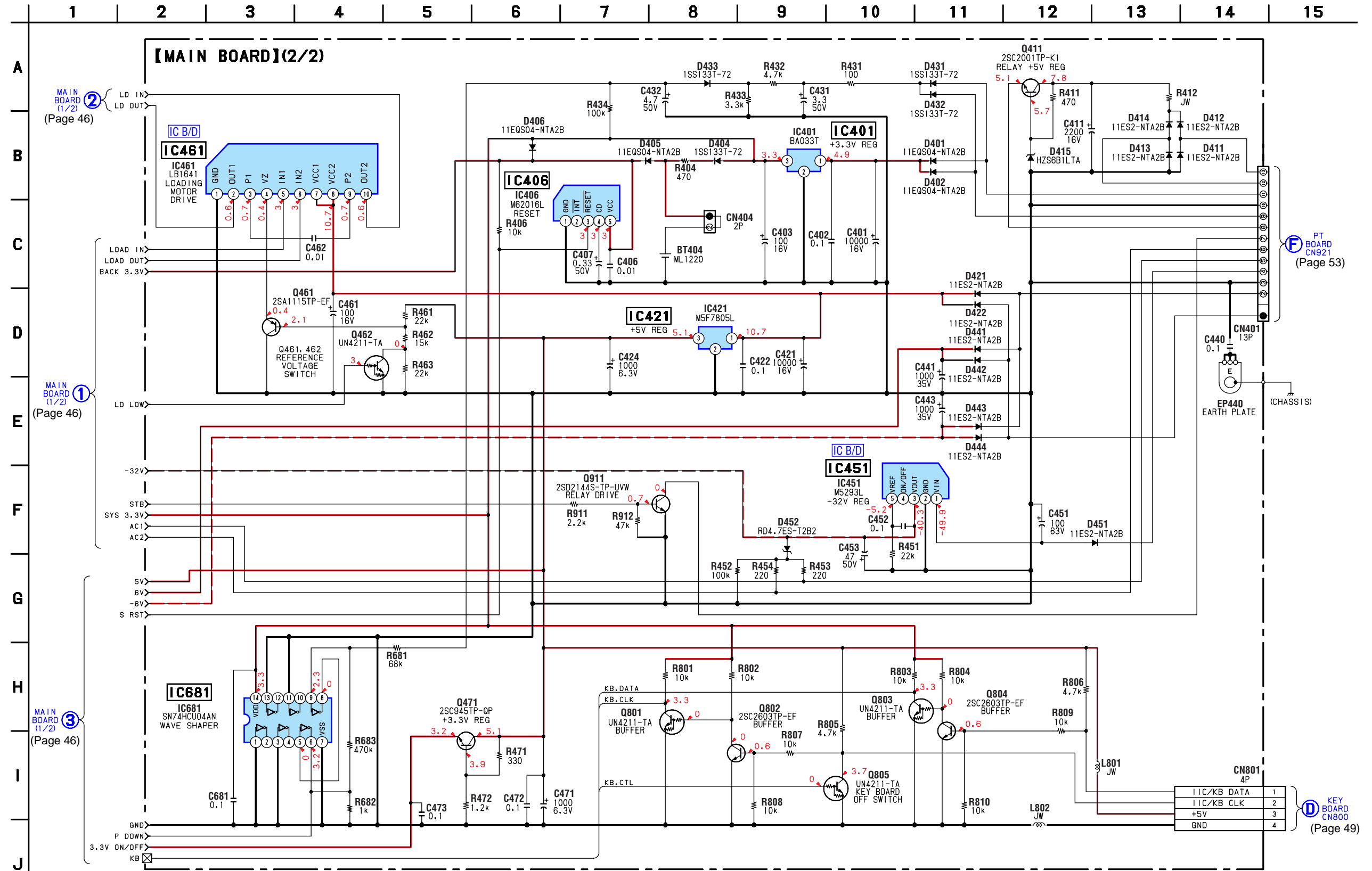
**6-9. SCHEMATIC DIAGRAM — MAIN SECTION (1/2) —**

- Refer to page 41 for Waveforms.
- Refer to page 55 for IC Block Diagram.



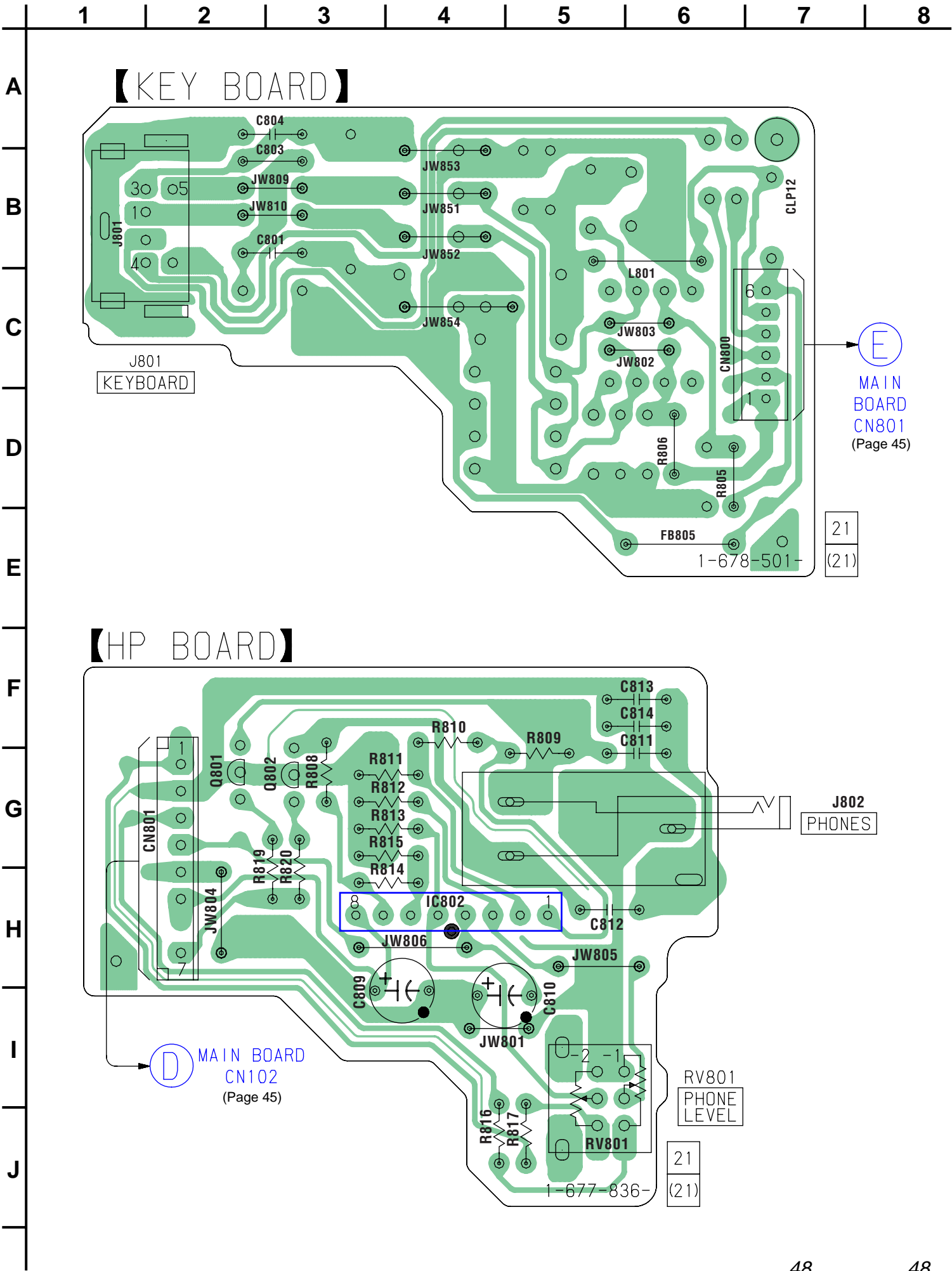
Semiconductor Location	
Ref. No.	Location
D101	C-13
D102	B-13
D151	H-8
D152	G-10
D201	C-13
D202	B-13
D401	E-2
D402	F-2
D404	F-6
D405	F-6
D406	F-6
D411	E-2
D412	E-2
D413	E-2
D414	E-2
D415	E-2
D421	G-2
D422	G-2
D431	E-2
D432	F-2
D433	E-6
D441	H-2
D442	H-2
D443	H-2
D444	H-2
D451	F-4
D452	D-6
IC1	D-9
IC101	F-13
IC111	E-13
IC112	F-13
IC141	F-10
IC241	G-10
IC401	F-6
IC406	F-7
IC421	G-3
IC451	D-6
IC461	D-5
IC500	B-13
IC611	H-11
IC631	H-9
IC641	G-10
IC651	G-9
IC681	H-7
Q121	G-12
Q151	G-11
Q221	G-12
Q411	E-2
Q461	D-5
Q462	D-6
Q471	G-7
Q801	H-4
Q802	H-5
Q803	H-5
Q804	H-5
Q805	H-5
Q911	F-3

## 6-10. SCHEMATIC DIAGRAM — MAIN SECTION (2/2) — • Refer to page 55 for IC Block Diagrams.



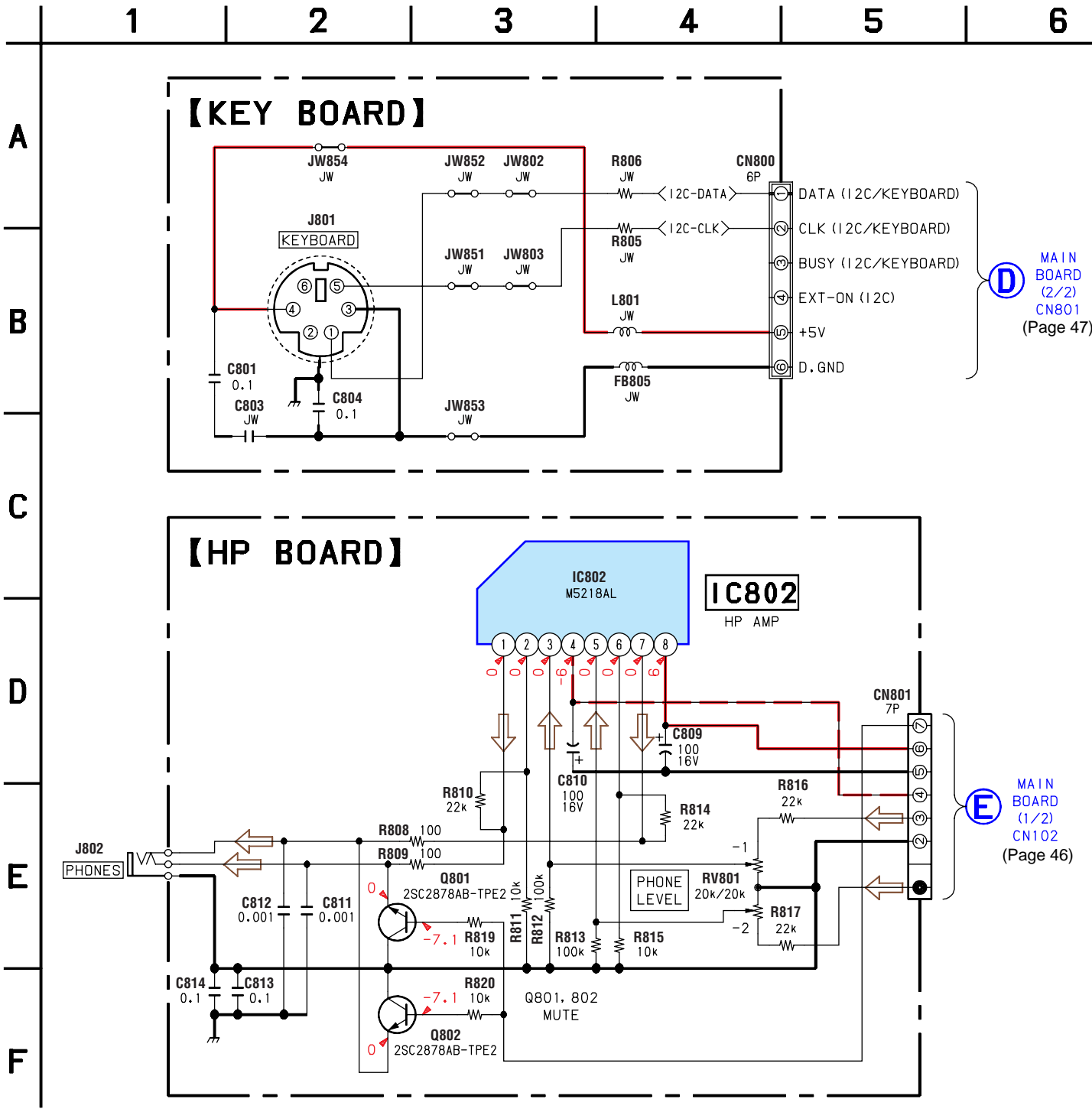


6-11. PRINTED WIRING BOARDS — KEY SECTION — • Refer to page 41 for Circuit Boards Location.

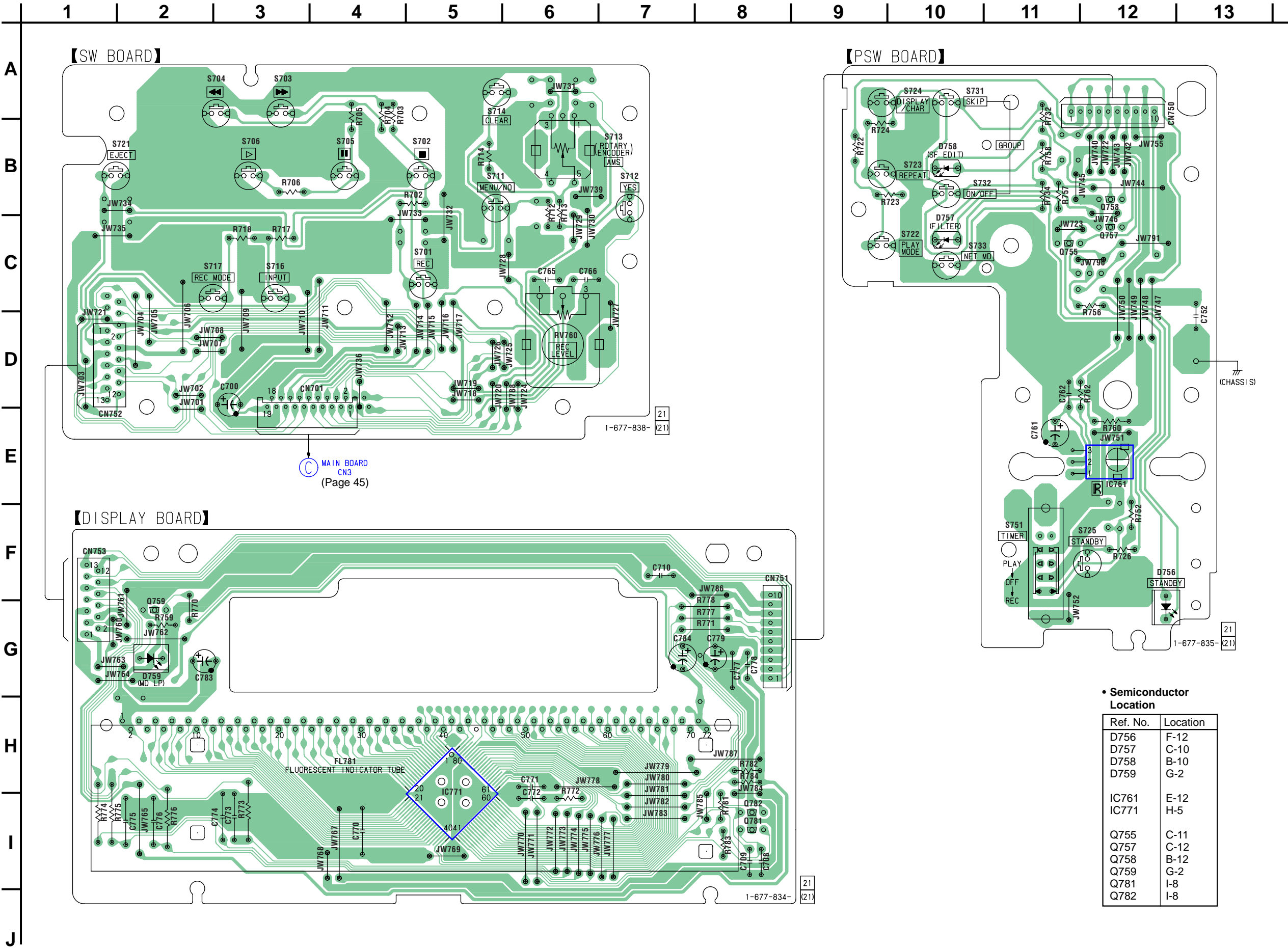




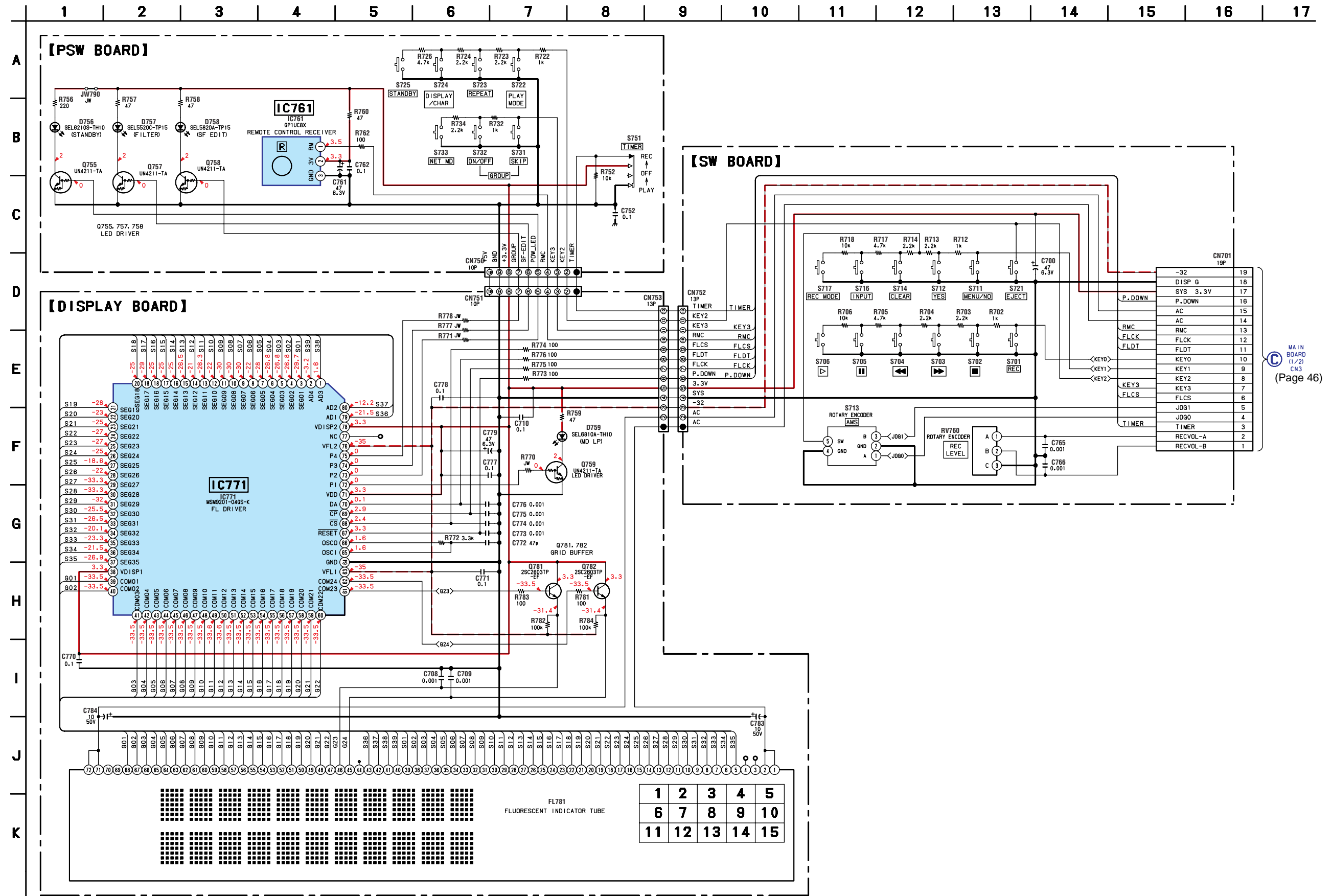
6-12. SCHEMATIC DIAGRAM — KEY SECTION —



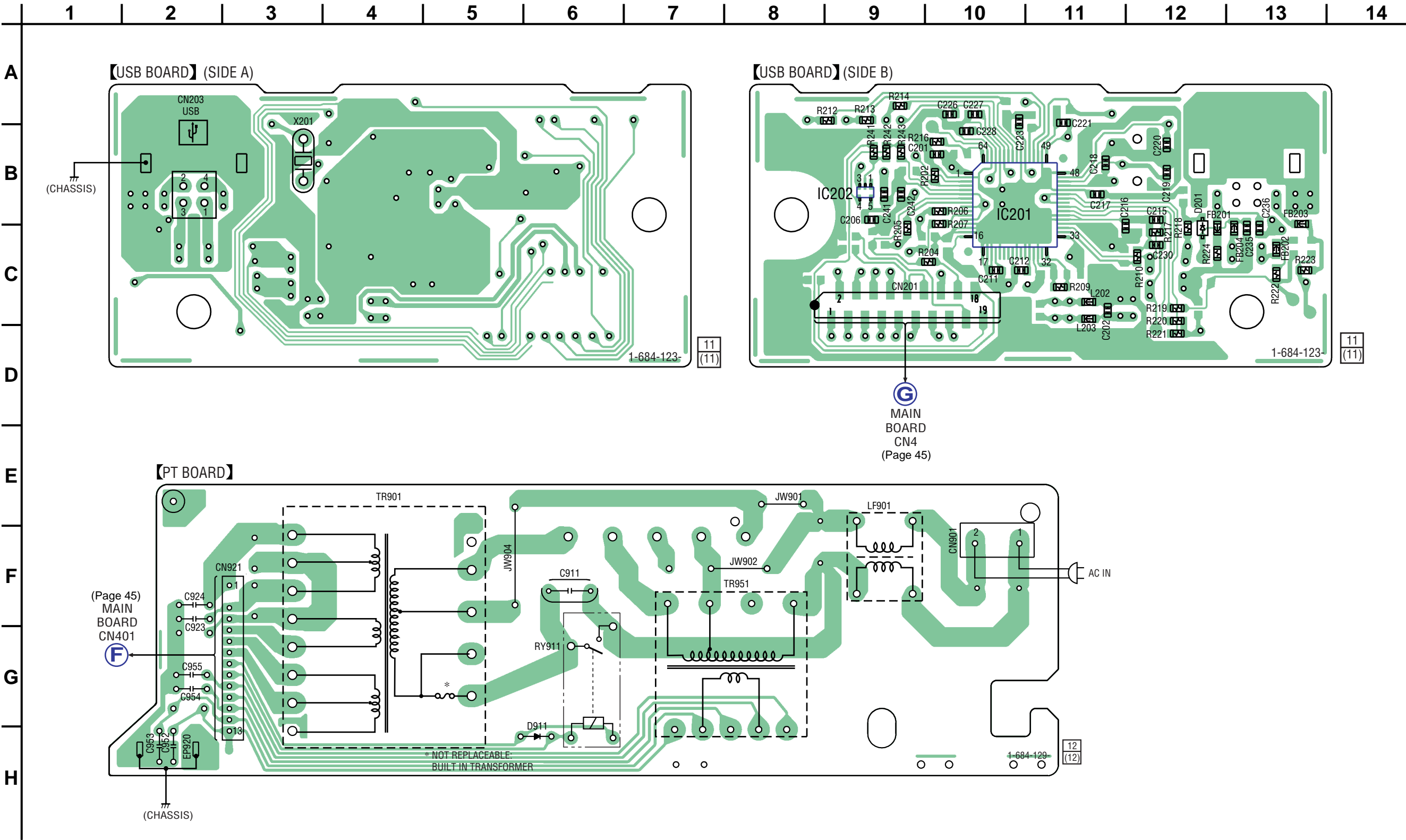
6-13. PRINTED WIRING BOARDS — DISPLAY SECTION — • Refer to page 41 for Circuit Boards Location.



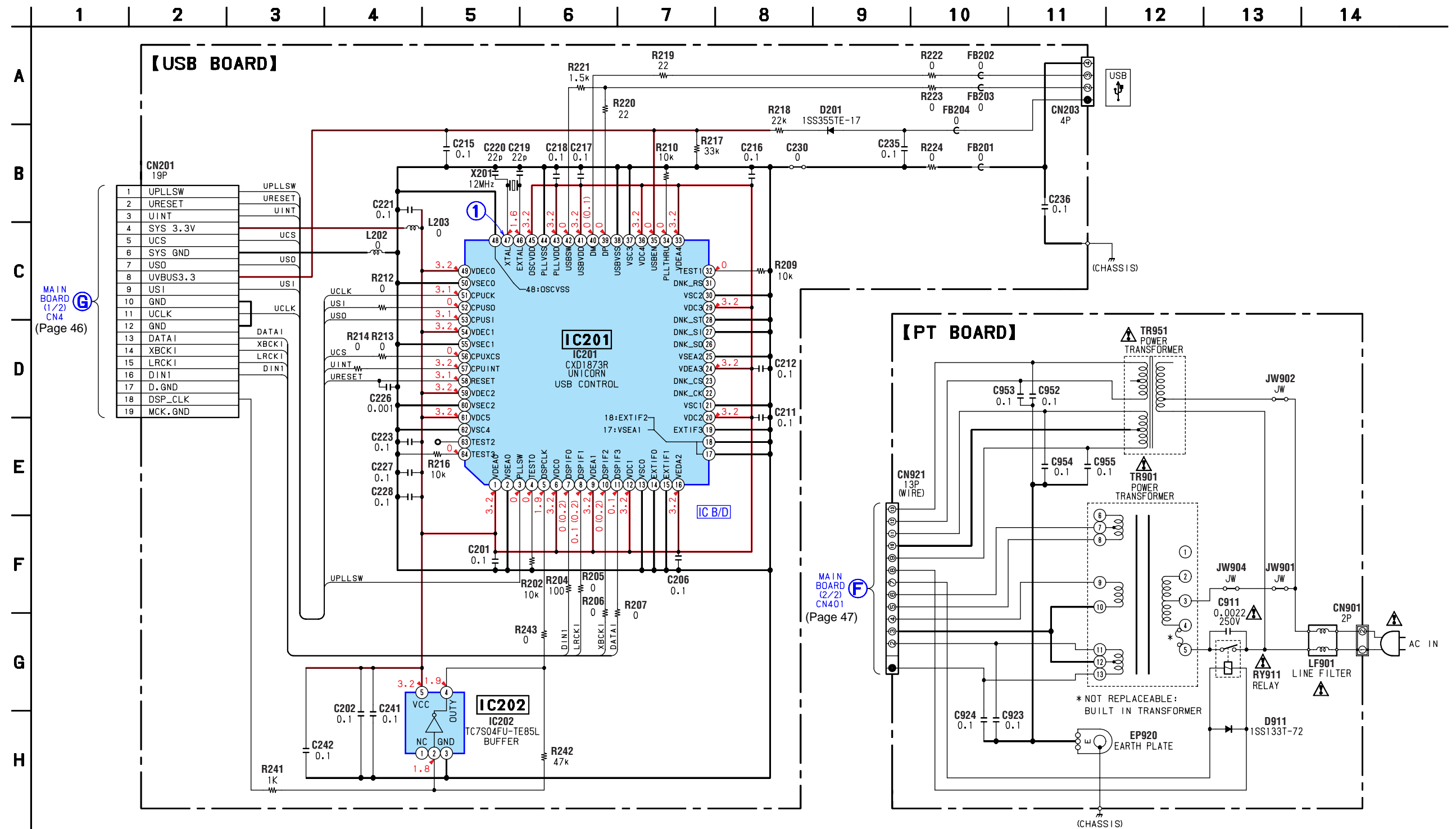
6-14. SCHEMATIC DIAGRAM — DISPLAY SECTION —



6-15. PRINTED WIRING BOARDS — USB/POWER SECTION — • Refer to page 41 for Circuit Boards Location.

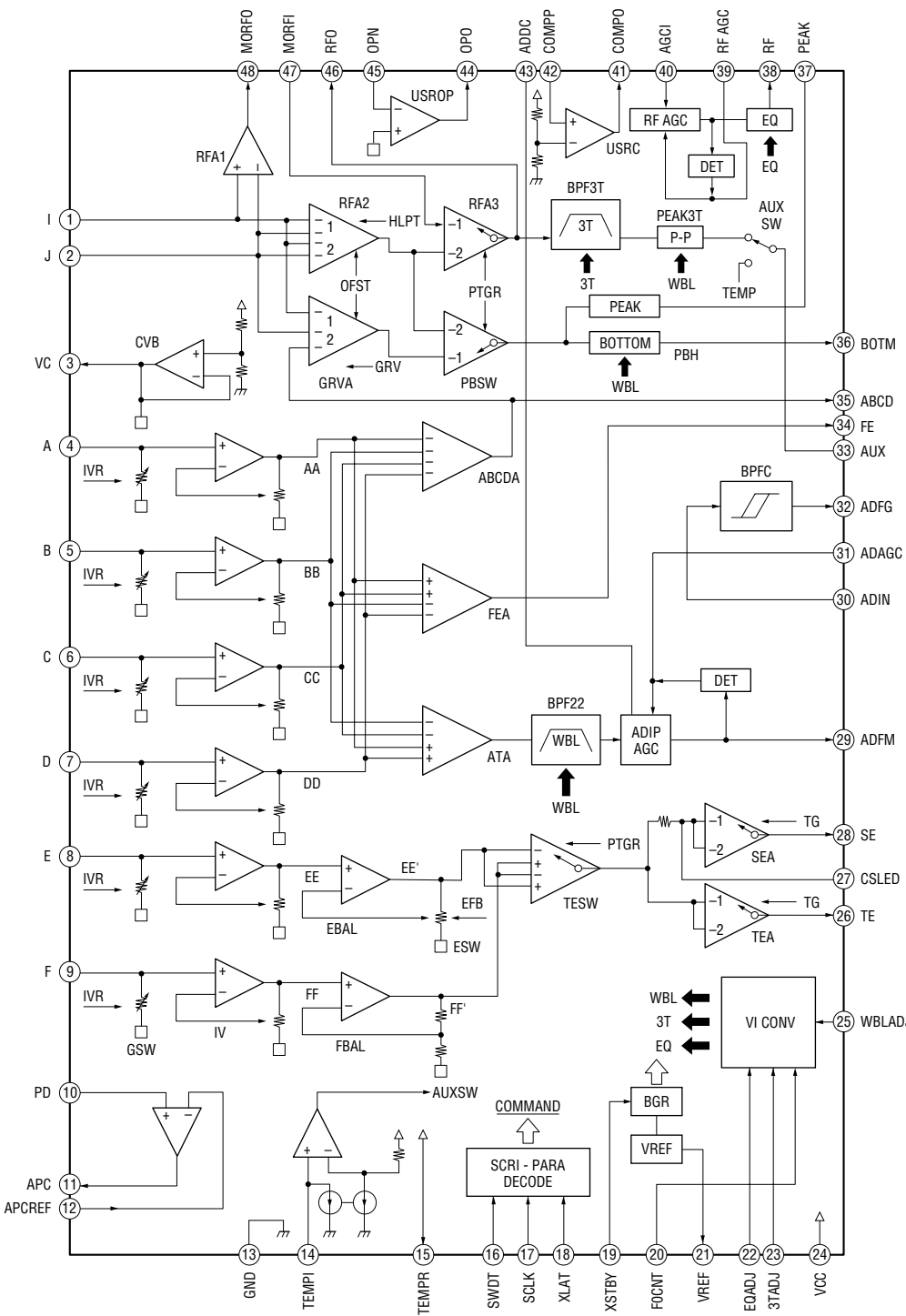


6-16. SCHEMATIC DIAGRAM — USB/POWER SECTION — • Refer to page 55 for IC Block Diagram.

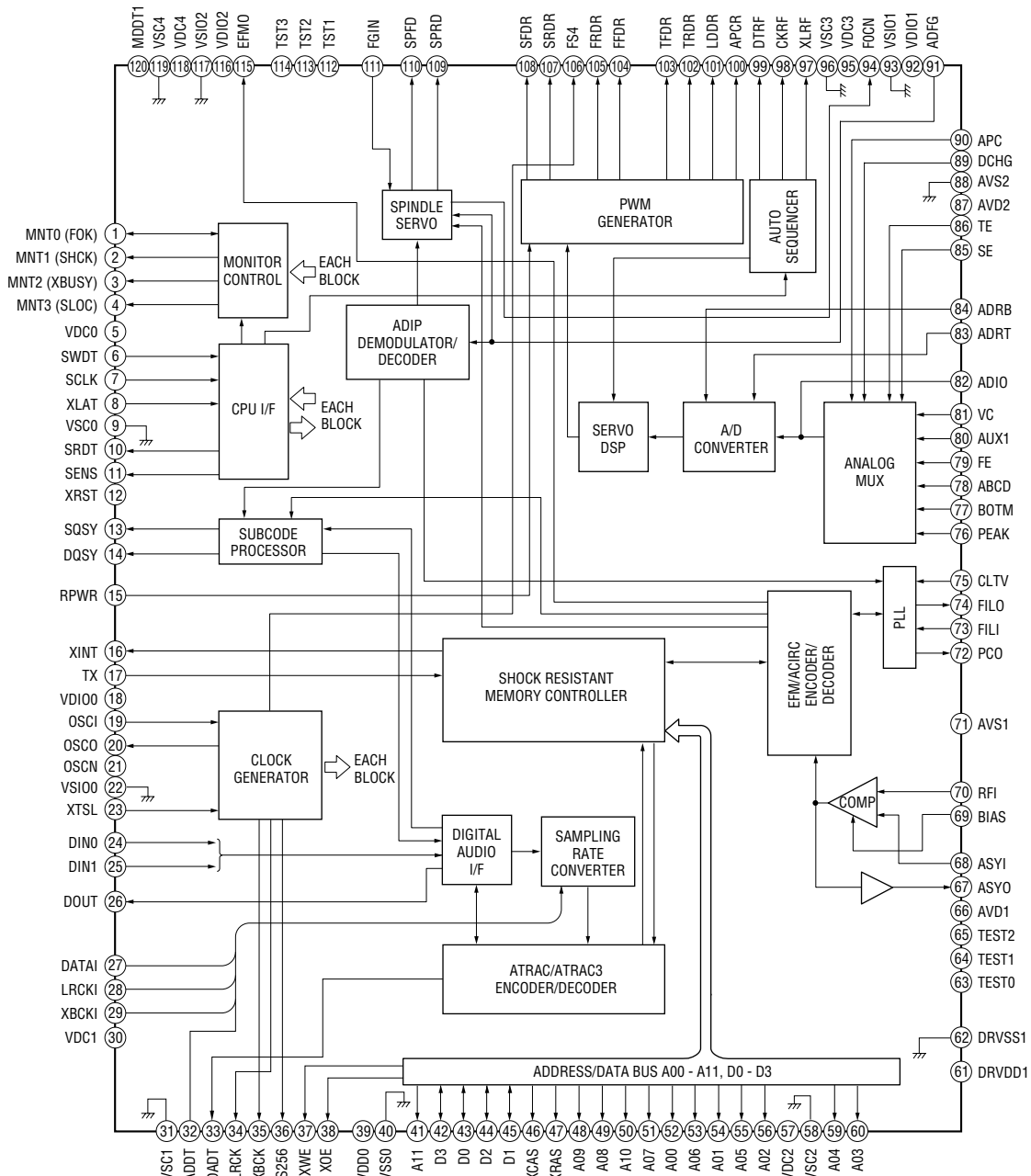


6-17. IC BLOCK DIAGRAMS

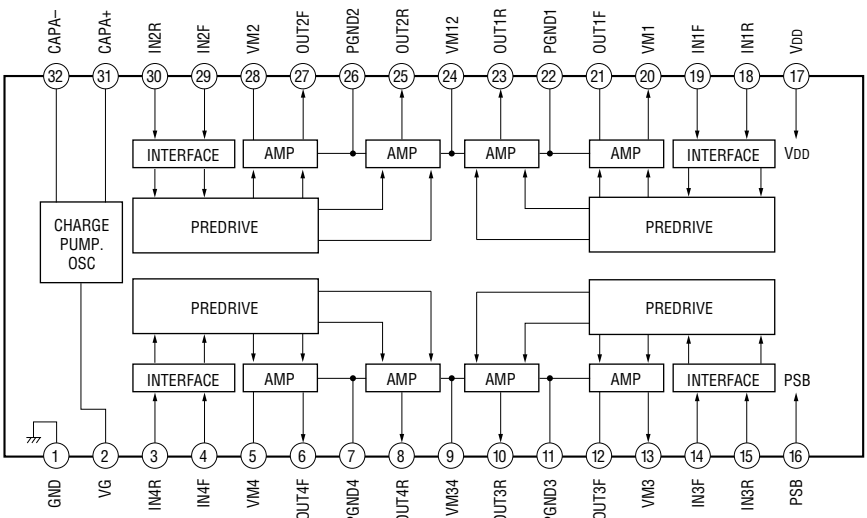
IC101 CXA2523AR (BD BOARD)



IC201 CXD2664R (BD BOARD)

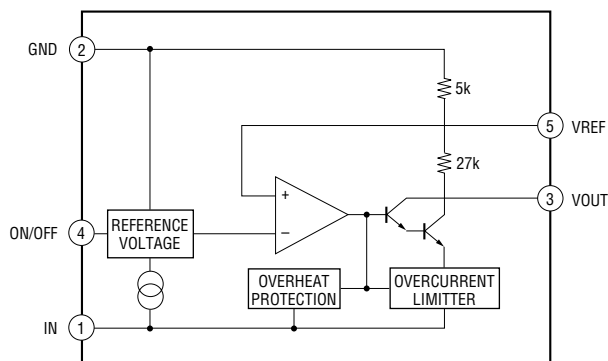


IC401 BH6519FS-E2 (BD BOARD)

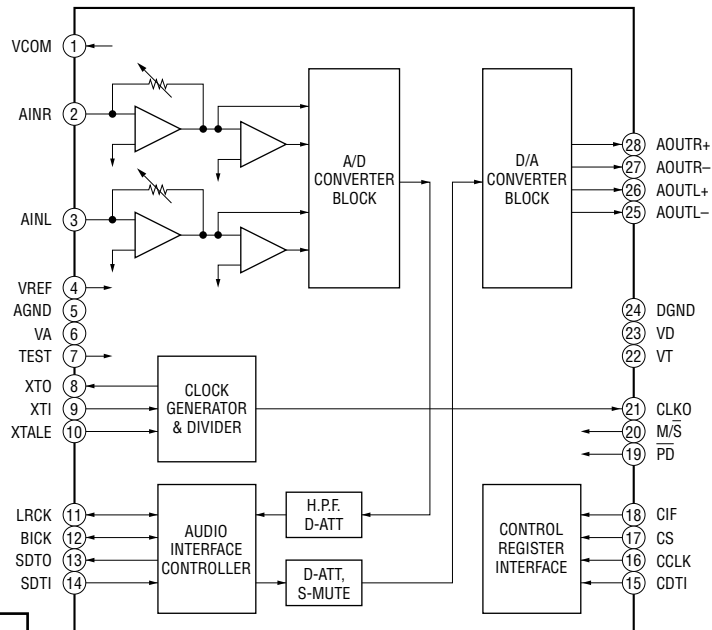




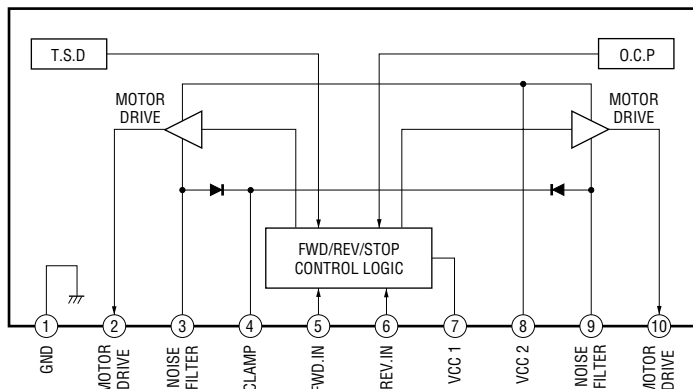
IC451 M5293L (MAIN BOARD)



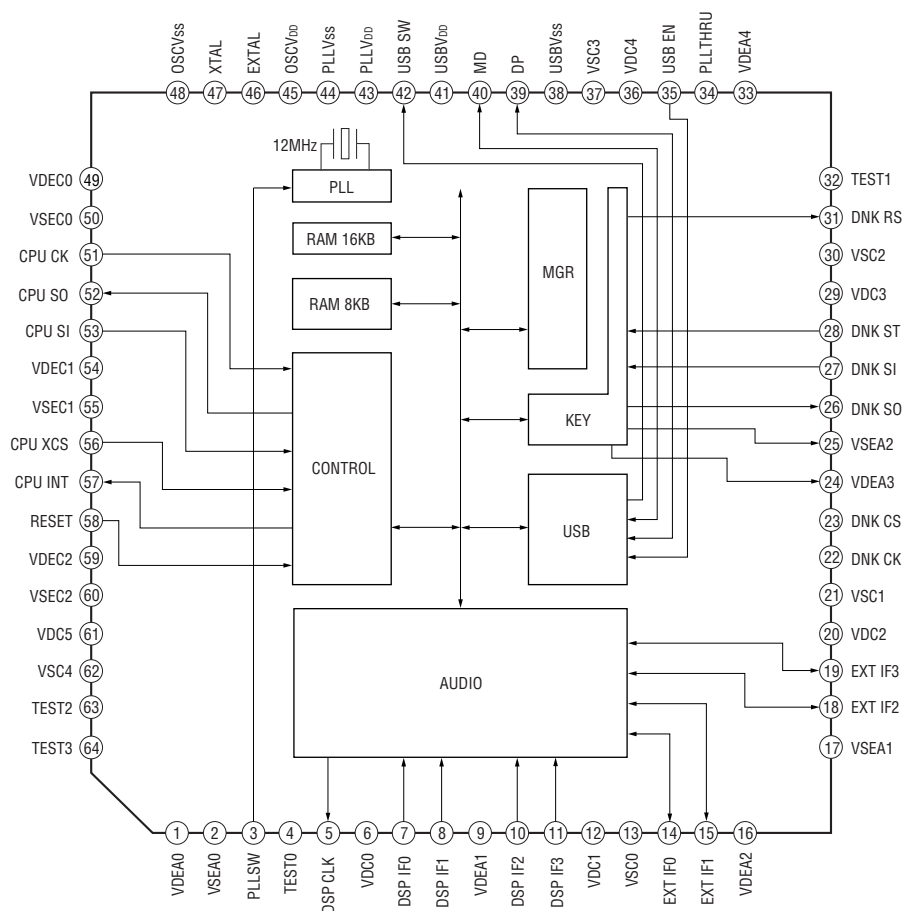
IC500 AK4524 (MAIN BOARD)



IC461 LB1641 (MAIN BOARD)





IC201 CXD1873R (USB BOARD)



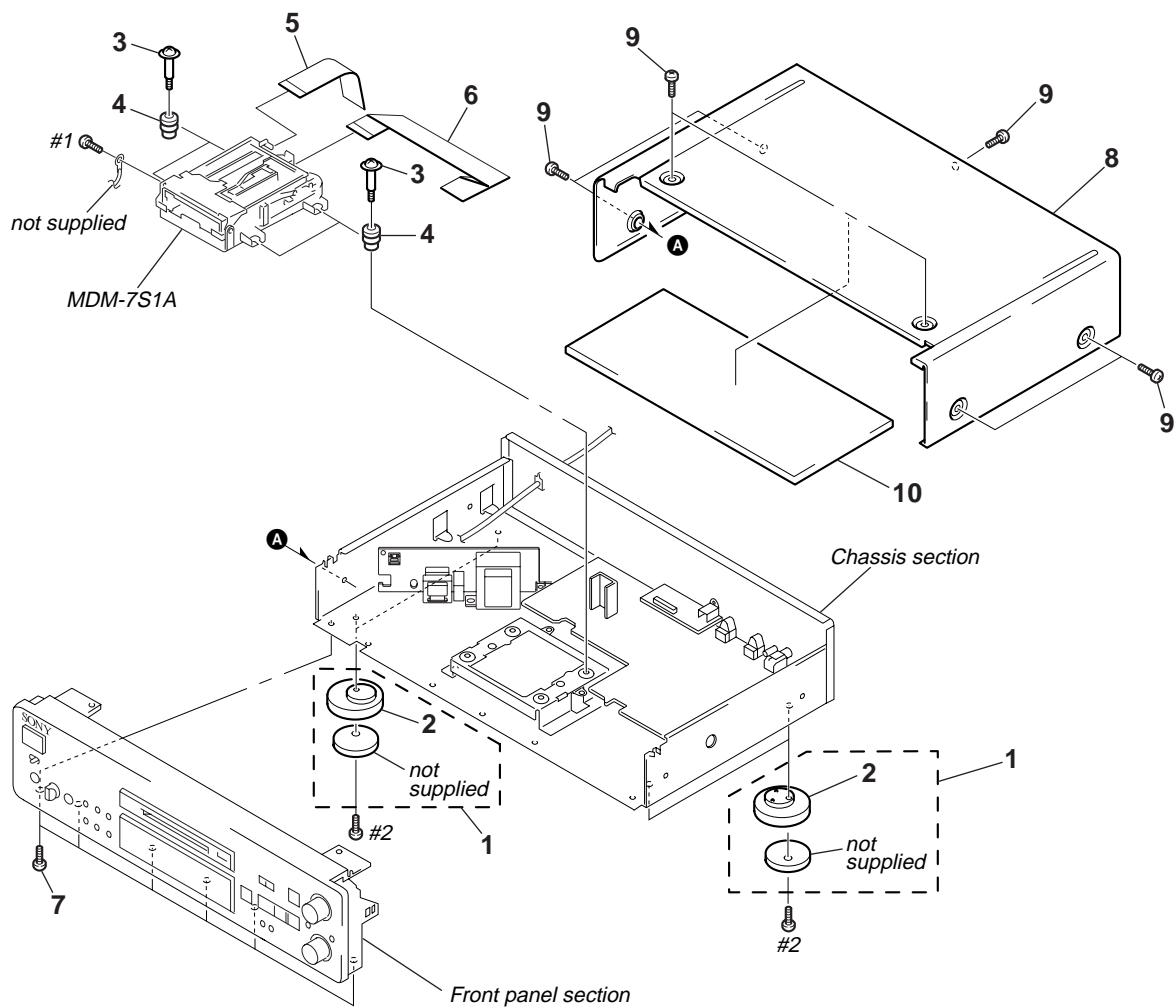
SECTION 7  
EXPLODED VIEWS

- NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
  - Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
  - -XX and -X mean standardized parts, so they may have some difference from the original one.

- Color Indication of Appearance Parts  
Example :  
KNOB, BALANCE (WHITE) ... (RED)  
Parts Color Cabinet's Color
- Accessories are given in the last of this parts list.

The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

7-1. CASE SECTION

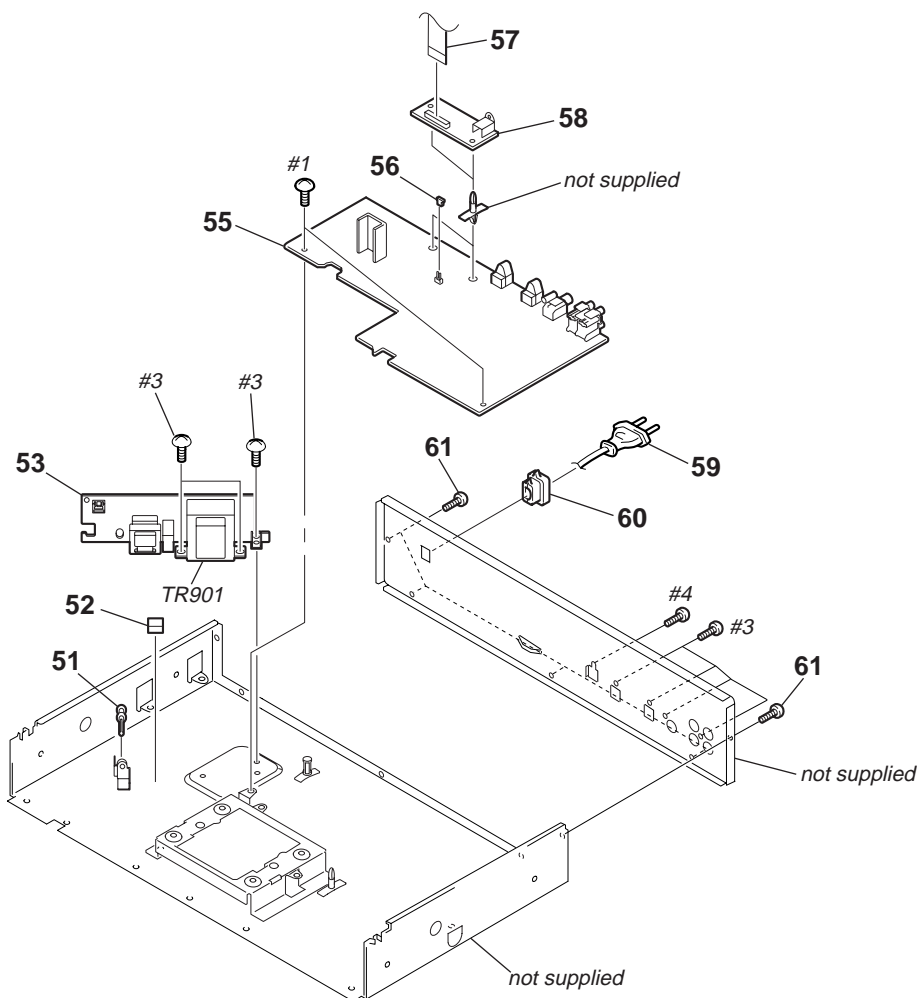


Ref. No.	Part No.	Description	Remark
1	X-4949-523-1	FOOT ASSY (F50180S)	
2	4-970-123-51	FOOT (F50180S)	
3	4-228-643-11	SCREW (+BVTTHW M3), STEP	
4	4-228-689-01	INSULATOR	
5	1-792-811-11	WIRE (FLAT TYPE) (23 CORE)	
6	1-757-928-11	WIRE (FLAT TYPE) (27 CORE)	
7	3-704-515-21	SCREW (BV/RING)	
* 8	4-997-138-03	CASE (409526) (BLACK)...(BLACK)	
* 8	4-997-138-43	CASE (409526) (SILVER)...(SILVER)	

Ref. No.	Part No.	Description	Remark
9	4-227-843-01	SCREW (TP), FLAT HEAD (BLACK)...(BLACK)	(AEP)
9	4-227-843-11	SCREW (TP), FLAT HEAD (SILVER)...(SILVER)	(AEP)
9	4-227-843-22	SCREW (TP), FLAT HEAD (UK)	
10	4-218-995-01	REINFORCEMENT (CASE) (UK)	
#1	7-685-850-04	SCREW +BVTT 2X3 (S)	
#2	7-685-885-09	SCREW +BVTT 4X16 (S)	



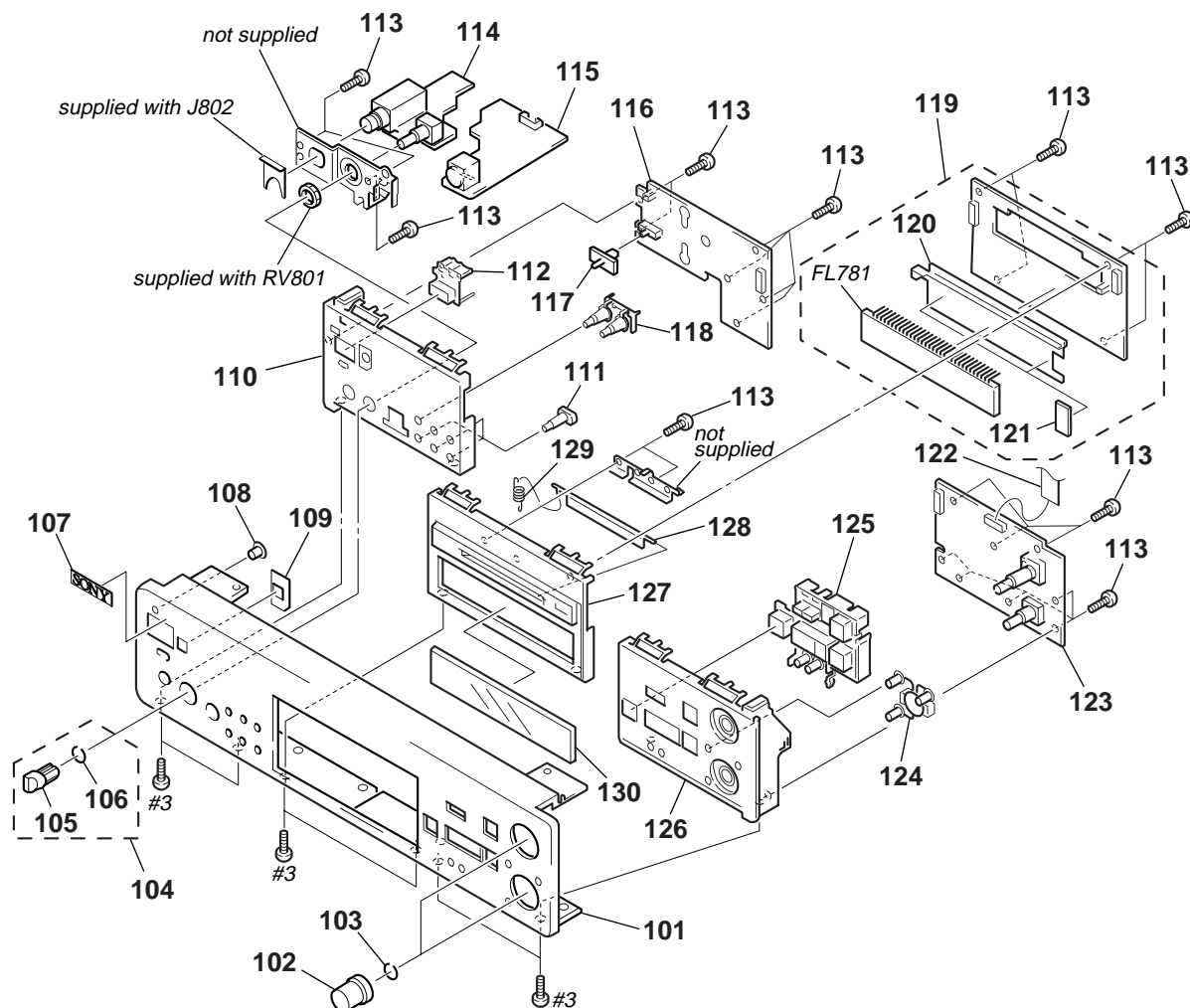
## 7-2. CHASSIS SECTION



The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety. Replace only with part number specified.

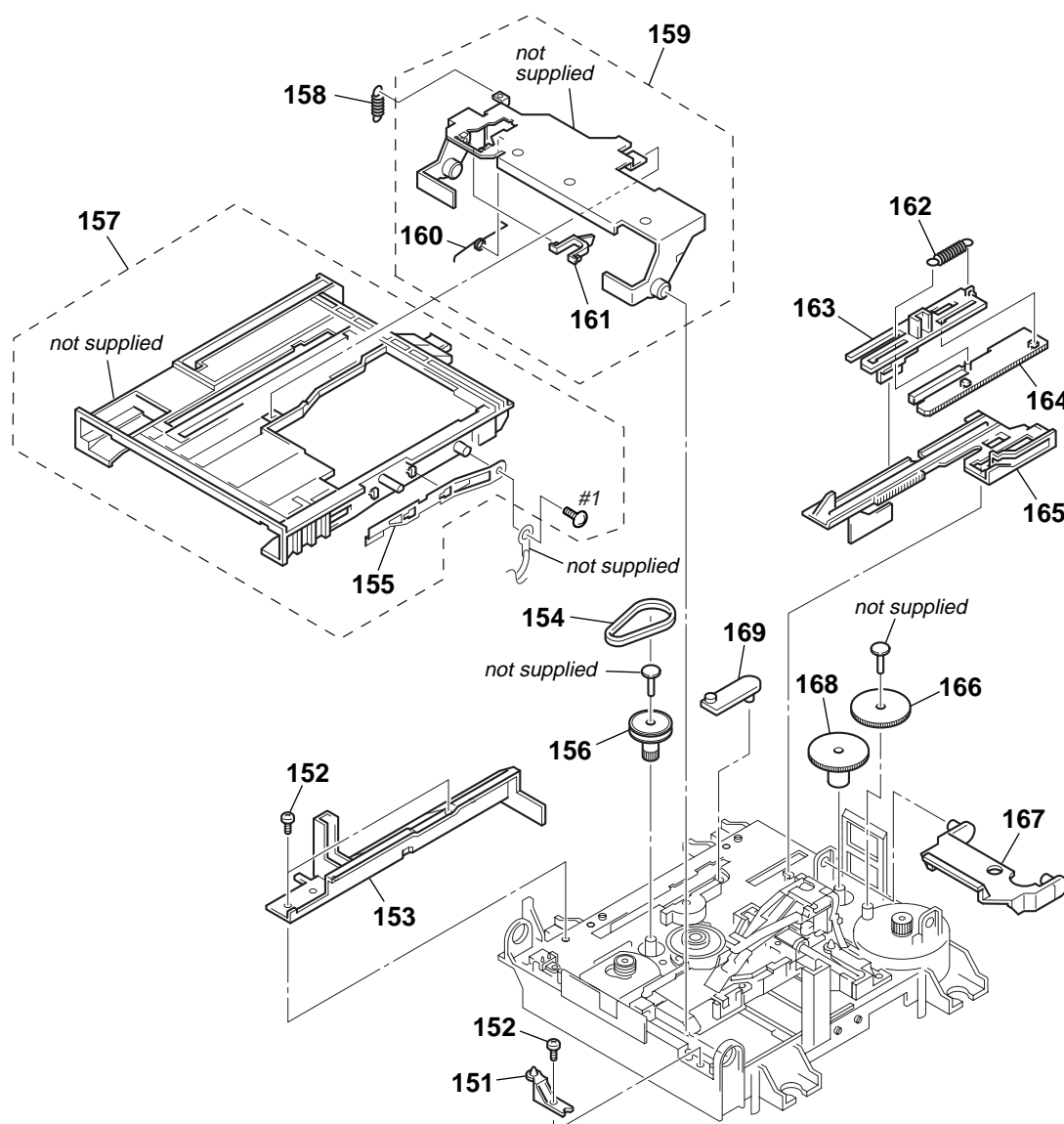
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-531-576-41	RIVET (DIA.3), NYLON		$\triangle$ 59	1-558-568-21	CORD, POWER (AEP)	
52	3-937-248-01	CUSHION (A)		$\triangle$ 59	1-751-523-11	CORD, POWER (UK)	
53	1-684-129-12	PT BOARD		* 60	3-703-244-00	BUSHING (2104), CORD	
54	3-703-249-01	SCREW, S TIGHT, +PTTWH 3X6		61	3-704-515-21	SCREW (BV/RING)	
55	A-4728-636-A	MAIN BOARD, COMPLETE (AEP)		$\triangle$ TR901	1-437-339-11	TRANSFORMER, POWER	
55	A-4730-485-A	MAIN BOARD, COMPLETE (UK)		#1	7-685-850-04	SCREW +BVTT 2X3 (S)	
* 56	1-569-972-21	SOCKET, SHORT 2P		#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
57	1-824-049-11	WIRE (FLAT TYPE) (19 CORE)		#4	7-685-871-09	SCREW +BVTT 3X6 (S)	
58	A-4728-568-A	USB BOARD, COMPLETE					

## 7-3. FRONT PANEL SECTION



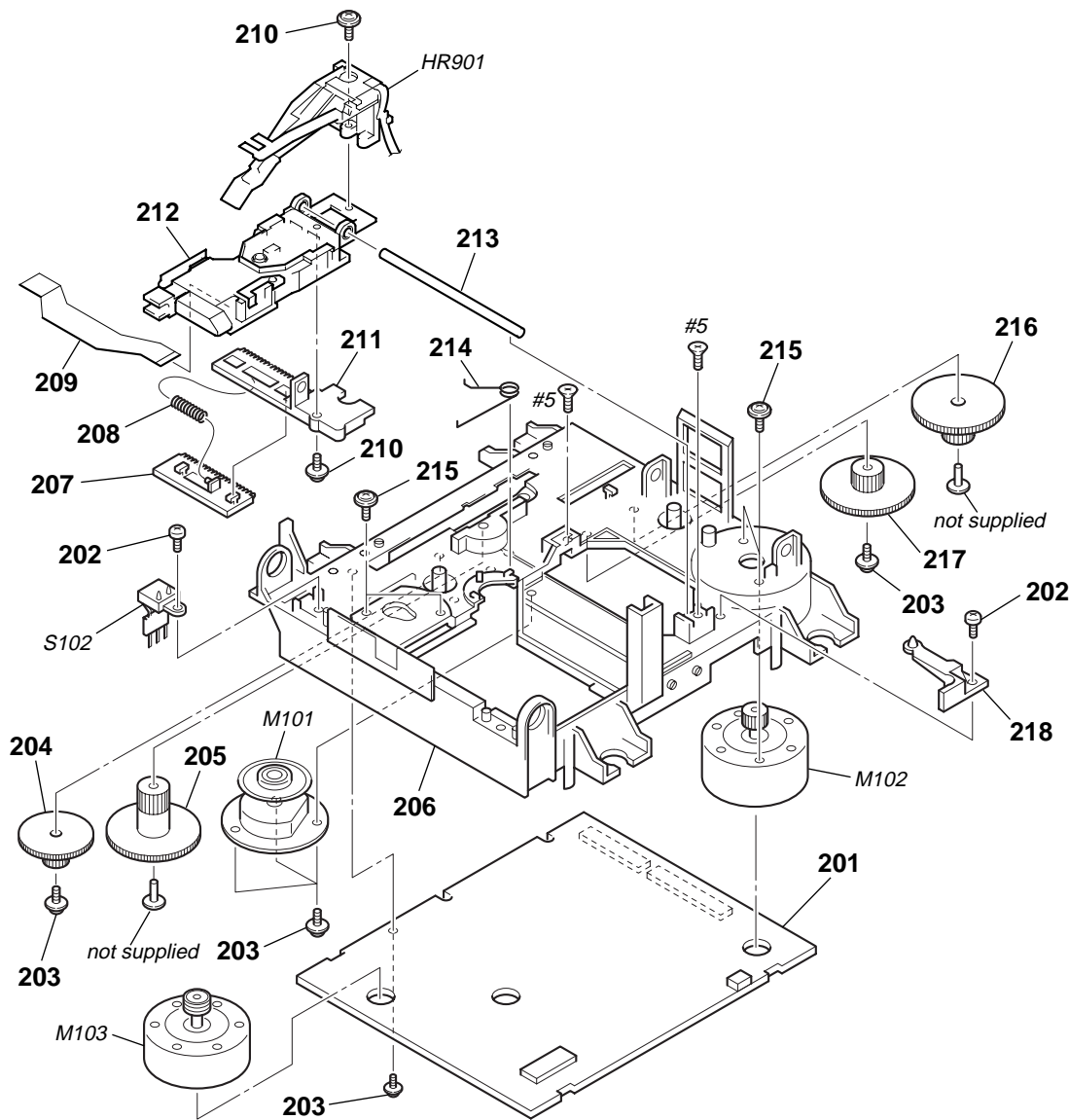
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	4-227-839-81	PANEL, FRONT (BLACK)...(BLACK)		117	4-971-774-01	KNOB (TIMER) (BLACK)...(BLACK)	
101	4-227-839-91	PANEL, FRONT (SILVER)...(SILVER)		117	4-971-774-31	KNOB (TIMER) (SILVER)...(SILVER)	
102	4-227-834-01	KNOB (AMS) (BLACK)...(BLACK)		118	X-4953-057-1	BUTTON (SF) ASSY (BLACK)...(BLACK)	
102	4-227-834-11	KNOB (AMS) (SILVER)...(SILVER)		118	X-4953-058-1	BUTTON (SF) ASSY (SILVER)...(SILVER)	
103	3-354-981-11	SPRING (SUS), RING		119	A-4728-637-A	DISPLAY BOARD, COMPLETE	
104	A-2003-693-A	KNOB (DIA.10) ASSY (BLACK)...(BLACK)		* 120	4-996-686-03	HOLDER (FL)	
104	A-4672-996-A	KNOB (DIA.10) ASSY (SILVER)...(SILVER)		* 121	4-955-901-01	CUSHION (FL)	
105	3-354-931-01	KNOB (DIA.10) (BLACK)...(BLACK)		122	1-792-926-11	WIRE (FLAT TYPE) (19 CORE)	
105	3-354-931-41	KNOB (DIA.10) (SILVER)...(SILVER)		123	A-4728-640-A	SW BOARD, COMPLETE	
106	3-354-981-01	SPRING (SUS), RING		124	4-228-517-01	BUTTON (EDIT) (BLACK)...(BLACK)	
107	4-942-568-41	EMBLEM (NO.5), SONY (BLACK)...(BLACK)		124	4-228-517-11	BUTTON (EDIT) (SILVER)...(SILVER)	
107	4-942-568-61	EMBLEM (NO.5), SONY (SILVER)...(SILVER)		125	4-227-833-01	BUTTON (PLAY) (BLACK)...(BLACK)	
108	4-998-607-01	INDICATOR (POWER)		125	4-227-833-11	BUTTON (PLAY) (SILVER)...(SILVER)	
109	4-228-518-01	WINDOW (RM)		126	4-227-183-01	BASE (R), PANEL (BLACK)...(BLACK)	
110	4-227-832-01	BASE (L), PANEL (BLACK)...(BLACK)		126	4-227-183-11	BASE (R), PANEL (SILVER)...(SILVER)	
110	4-227-832-14	BASE (L), PANEL (SILVER)...(SILVER)		127	X-4953-231-2	BASE (M) ASSY, PANEL (SILVER)...(SILVER)	
111	4-228-512-01	BUTTON (SUB) (BLACK)...(BLACK)		127	X-4954-945-1	BASE (M) ASSY, PANEL (BLACK)...(BLACK)	
111	4-228-512-11	BUTTON (SUB) (SILVER)...(SILVER)		128	4-230-848-41	LID (MD) (BLACK)...(BLACK)	
112	4-228-513-01	BUTTON (POWER) (BLACK)...(BLACK)		128	4-230-848-61	LID (MD) (SILVER)...(SILVER)	
112	4-228-513-21	BUTTON (POWER) (SILVER)...(SILVER)		129	4-228-630-01	SPRING (LID), TENSION COIL	
113	4-951-620-01	SCREW (2.6X8), +BVTP		130	4-228-522-01	PLATE, INDICATION	
114	A-4728-639-A	HP BOARD, COMPLETE		FL781	1-517-987-11	INDICATOR TUBE, FLUORESCENT	
115	A-4728-641-A	KEY BOARD, COMPLETE		#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
116	A-4728-638-A	PSW BOARD, COMPLETE					

# 7-4. MECHANISM SECTION-1 (MDM-7S1A)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 151	4-996-267-01	BASE (BU-D)		161	4-228-923-01	LOCK (HOLDER)	
152	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI		162	4-227-013-01	SPRING (EJ), TENSION	
153	4-226-994-01	GUIDE (L)		163	4-226-996-01	LIMITER (EJ)	
154	4-227-025-01	BELT (LOADING)		164	4-226-995-01	SLIDER (EJ)	
155	X-4952-665-1	SPRING (SHT) ASSY, LEAF		165	4-226-997-04	SLIDER	
156	4-227-002-01	GEAR, PULLEY		166	4-227-006-01	GEAR (SA)	
157	A-4735-075-B	HOLDER ASSY		167	4-226-999-01	LEVER (HEAD)	
158	4-231-118-01	SPRING (HOLDER), TENSION		168	4-227-007-01	GEAR (SB)	
159	A-4680-638-B	RETAINER COMPLETE ASSY		169	4-226-998-01	LEVER (CHG)	
160	4-229-533-02	SPRING (STOPPER), TORSION		#1	7-685-850-04	SCREW +BVTT 2X3 (S)	

7-5. MECHANISM SECTION-2  
(MDM-7S1A)



The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
201	A-4727-976-A	BD BOARD, COMPLETE		213	4-996-265-01	SHAFT, MAIN	
202	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI		214	4-230-716-01	SPRING (SPDL), TORSION	
203	3-372-761-01	SCREW (M1.7), TAPPING		215	4-232-270-01	SCREW (1.7X3.5), +PWH	
204	4-227-004-01	GEAR (LC)		216	4-227-008-01	GEAR (SC)	
205	4-227-005-01	GEAR (LD)		217	4-227-009-01	GEAR (SD)	
206	4-226-989-01	CHASSIS		218	4-226-990-04	BASE (BU-A)	
207	4-226-993-01	RACK		HR901	1-500-670-22	HEAD, OVER WRITE	
208	4-227-014-01	SPRING (RACK), COMPRESSION		M101	A-4735-757-A	MOTOR ASSY, SPINDLE (SPINDLE)	
209	1-678-514-11	FLEXIBLE BOARD		M102	A-4735-076-A	MOTOR ASSY, SLED (SLED)	
210	4-988-560-01	SCREW (+P 1.7X6)		M103	A-4735-074-A	MOTOR ASSY, LOADING (LOADING)	
211	4-226-992-01	BASE, SL		S102	1-771-957-11	SWITCH, PUSH (2 KEY) (OPEN/CLOSE)	
$\triangle$ 212	A-4672-541-A	OPTICAL PICK-UP KMS-260		#5	7-685-204-19	SCREW +KTP 2X6 TYPE2 NON-SLIT	

## SECTION 8 ELECTRICAL PARTS LIST

BD

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS  
All resistors are in ohms.  
METAL: Metal-film resistor.  
METAL OXIDE: Metal oxide-film resistor.  
F: nonflammable

- Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS  
In each case, u :  $\mu$ , for example:  
uA.. :  $\mu$ A.. uPA.. :  $\mu$ PA..  
uPB.. :  $\mu$ PB.. uPC.. :  $\mu$ PC.. uPD.. :  $\mu$ PD..
- CAPACITORS  
uF :  $\mu$ F
- COILS  
uH :  $\mu$ H

The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark		Ref. No.	Part No.	Description	Remark	
	A-4727-976-A	BD BOARD, COMPLETE *****			C241	1-164-156-11	CERAMIC CHIP 0.1uF		25V
		< CAPACITOR >			C242	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C101	1-117-720-11	CERAMIC CHIP 4.7uF		10V	C250	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C103	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	C251	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C104	1-164-156-11	CERAMIC CHIP 0.1uF		25V	C252	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C105	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V					
C106	1-135-259-11	TANTAL. CHIP 10uF	20%	6.3V	C253	1-164-156-11	CERAMIC CHIP 0.1uF		25V
					C254	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V
C107	1-164-227-11	CERAMIC CHIP 0.022uF	10%	25V	C255	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C108	1-164-156-11	CERAMIC CHIP 0.1uF		25V	C299	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C109	1-165-176-11	CERAMIC CHIP 0.047uF	10%	16V	C301	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C110	1-115-416-11	CERAMIC CHIP 0.001uF	5%	25V					
C111	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	C302	1-164-156-11	CERAMIC CHIP 0.1uF		25V
					C405	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C112	1-164-227-11	CERAMIC CHIP 0.022uF	10%	25V	C406	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V
C113	1-162-969-11	CERAMIC CHIP 0.0068uF	10%	25V	C407	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C114	1-162-966-11	CERAMIC CHIP 0.0022uF	10%	50V	C409	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C115	1-164-156-11	CERAMIC CHIP 0.1uF		25V					
C116	1-117-720-11	CERAMIC CHIP 4.7uF		10V	C410	1-126-206-11	ELECT CHIP 100uF	20%	6.3V
					C411	1-117-720-11	CERAMIC CHIP 4.7uF		10V
C117	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	C412	1-162-964-11	CERAMIC CHIP 0.001uF	10%	50V
C118	1-162-968-11	CERAMIC CHIP 0.0047uF	10%	50V	C490	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C119	1-125-837-11	CERAMIC CHIP 1uF	10%	6.3V	C501	1-131-872-11	CERAMIC CHIP 0.001uF	10%	630V
C120	1-110-563-11	CERAMIC CHIP 0.068uF	10%	16V					
C121	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V	C502	1-164-156-11	CERAMIC CHIP 0.1uF		25V
					C503	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C122	1-164-677-11	CERAMIC CHIP 0.033uF	10%	16V	C504	1-117-370-11	CERAMIC CHIP 10uF		10V
C175	1-164-156-11	CERAMIC CHIP 0.1uF		25V	C505	1-126-206-11	ELECT CHIP 100uF	20%	6.3V
C194	1-164-156-11	CERAMIC CHIP 0.1uF		25V	C550	1-117-970-11	ELECT CHIP 22uF	20%	10V
C205	1-162-968-11	CERAMIC CHIP 0.0047uF	10%	50V					
C206	1-126-206-11	ELECT CHIP 100uF	20%	6.3V	C701	1-164-156-11	CERAMIC CHIP 0.1uF		25V
					C702	1-117-720-11	CERAMIC CHIP 4.7uF		10V
C209	1-162-927-11	CERAMIC CHIP 100PF	5%	50V	C703	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C211	1-162-927-11	CERAMIC CHIP 100PF	5%	50V	C704	1-165-176-11	CERAMIC CHIP 0.047uF	10%	16V
C212	1-162-927-11	CERAMIC CHIP 100PF	5%	50V	C803	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C214	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V					
C215	1-164-677-11	CERAMIC CHIP 0.033uF	10%	16V	C809	1-117-720-11	CERAMIC CHIP 4.7uF		10V
					C899	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C216	1-125-889-11	CERAMIC CHIP 2.2uF	10%	10V	C901	1-126-206-11	ELECT CHIP 100uF	20%	6.3V
C219	1-162-927-11	CERAMIC CHIP 100PF	5%	50V	C902	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C220	1-125-891-11	CERAMIC CHIP 0.47uF	10%	10V	C903	1-126-206-11	ELECT CHIP 100uF	20%	6.3V
C221	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V					
C230	1-164-156-11	CERAMIC CHIP 0.1uF		25V	C904	1-164-156-11	CERAMIC CHIP 0.1uF		25V
					C905	1-126-206-11	ELECT CHIP 100uF	20%	6.3V
C231	1-164-156-11	CERAMIC CHIP 0.1uF		25V	C907	1-162-970-11	CERAMIC CHIP 0.01uF	10%	25V
C233	1-164-156-11	CERAMIC CHIP 0.1uF		25V	C908	1-117-370-11	CERAMIC CHIP 10uF		10V
C234	1-164-156-11	CERAMIC CHIP 0.1uF		25V	C909	1-104-852-11	TANTAL. CHIP 22uF	20%	10V
C235	1-164-156-11	CERAMIC CHIP 0.1uF		25V					
C240	1-164-156-11	CERAMIC CHIP 0.1uF		25V	C998	1-164-156-11	CERAMIC CHIP 0.1uF		25V
					C999	1-164-156-11	CERAMIC CHIP 0.1uF		25V
					C1102	1-164-156-11	CERAMIC CHIP 0.1uF		25V

# MDS-JB980

BD

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< CONNECTOR >				R104	1-216-853-11	METAL CHIP	470K 5% 1/10W
CN101	1-766-833-21	CONNECTOR, FFC/FPC (ZIF) 21P		R105	1-216-863-11	RES-CHIP	3.3M 5% 1/10W
CN102	1-784-835-21	CONNECTOR, FFC (LIF(NON-ZIF)) 27P		R106	1-216-845-11	METAL CHIP	100K 5% 1/10W
CN103	1-784-834-21	CONNECTOR, FFC (LIF(NON-ZIF)) 23P		R107	1-216-819-11	METAL CHIP	680 5% 1/10W
* CN104	1-580-055-21	PIN, CONNECTOR (SMD) 2P		R108	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
CN105	1-784-859-21	CONNECTOR, FFC (LIF(NON-ZIF)) 7P		R109	1-216-829-11	METAL CHIP	4.7K 5% 1/10W
< DIODE >				R110	1-216-853-11	METAL CHIP	470K 5% 1/10W
D101	8-719-988-61	DIODE 1SS355TE-17		R111	1-216-833-11	METAL CHIP	10K 5% 1/10W
D501	8-719-080-81	DIODE FS1J6		R112	1-216-845-11	METAL CHIP	100K 5% 1/10W
D502	8-719-080-81	DIODE FS1J6		R113	1-216-833-11	METAL CHIP	10K 5% 1/10W
< IC >				R114	1-216-829-11	METAL CHIP	4.7K 5% 1/10W
IC101	8-752-080-95	IC CXA2523AR		R115	1-216-833-11	METAL CHIP	10K 5% 1/10W
IC153	8-759-671-27	IC MSM51V4400E-70TS-K		R116	1-216-827-11	METAL CHIP	3.3K 5% 1/10W
IC181	8-759-481-17	IC MC74ACT08DTR2		R117	1-216-845-11	METAL CHIP	100K 5% 1/10W
IC195	(NOT SUPPLIED)	IC BR24C16F-E2		R118	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
IC201	8-752-414-89	IC CXD2664R		R119	1-216-837-11	METAL CHIP	22K 5% 1/10W
IC401	8-759-836-79	IC BH6519FS-E2		R120	1-216-839-11	METAL CHIP	33K 5% 1/10W
IC701	8-759-473-51	IC TLV2361CDBV		R121	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
IC803	6-701-793-01	IC CY24115-2SCT		R122	1-216-833-11	METAL CHIP	10K 5% 1/10W
IC926	8-759-835-63	IC NJM2391DL1-26(TE1)		R201	1-216-815-11	METAL CHIP	330 5% 1/10W
IC933	8-759-460-72	IC BA033FP-E2		R202	1-216-819-11	METAL CHIP	680 5% 1/10W
< COIL >				R203	1-216-809-11	METAL CHIP	100 5% 1/10W
L8	1-414-760-21	FERRITE, EMI (SMD)		R205	1-216-833-11	METAL CHIP	10K 5% 1/10W
L10	1-469-981-21	INDUCTOR, FERRITE BEAD		R206	1-216-833-11	METAL CHIP	10K 5% 1/10W
L122	1-414-760-21	FERRITE, EMI (SMD)		R207	1-216-811-11	METAL CHIP	150 5% 1/10W
L201	1-414-760-21	FERRITE, EMI (SMD)		R208	1-216-821-11	METAL CHIP	1K 5% 1/10W
L202	1-469-981-21	INDUCTOR, FERRITE BEAD		R209	1-216-815-11	METAL CHIP	330 5% 1/10W
L203	1-414-760-21	FERRITE, EMI (SMD)		R210	1-216-839-11	METAL CHIP	33K 5% 1/10W
L401	1-400-050-11	INDUCTOR, FERRITE BEAD		R211	1-216-857-11	METAL CHIP	1M 5% 1/10W
L402	1-400-050-11	INDUCTOR, FERRITE BEAD		R212	1-216-851-11	METAL CHIP	330K 5% 1/10W
L501	1-400-050-11	INDUCTOR, FERRITE BEAD		R214	1-216-845-11	METAL CHIP	100K 5% 1/10W
L502	1-400-050-11	INDUCTOR, FERRITE BEAD		R216	1-216-864-11	METAL CHIP	0 5% 1/10W
L550	1-414-760-21	FERRITE, EMI (SMD)		R217	1-216-833-11	METAL CHIP	10K 5% 1/10W
L601	1-469-981-21	INDUCTOR, FERRITE BEAD		R218	1-216-864-11	METAL CHIP	0 5% 1/10W
L602	1-469-981-21	INDUCTOR, FERRITE BEAD		R219	1-216-809-11	METAL CHIP	100 5% 1/10W
L603	1-414-760-21	FERRITE, EMI (SMD)		R224	1-216-809-11	METAL CHIP	100 5% 1/10W
L701	1-414-760-21	FERRITE, EMI (SMD)		R225	1-216-809-11	METAL CHIP	100 5% 1/10W
L801	1-414-760-21	FERRITE, EMI (SMD)		R226	1-216-809-11	METAL CHIP	100 5% 1/10W
* L899	1-500-282-11	INDUCTOR, FERRITE BEAD		R228	1-216-809-11	METAL CHIP	100 5% 1/10W
< TRANSISTOR >				R281	1-216-821-11	METAL CHIP	1K 5% 1/10W
Q181	8-729-018-75	FET 2SJ278MY		R298	1-216-809-11	METAL CHIP	100 5% 1/10W
Q182	8-729-017-65	FET 2SK1764KY		R299	1-216-864-11	METAL CHIP	0 5% 1/10W
Q201	8-729-403-35	TRANSISTOR UN5113		R301	1-216-833-11	METAL CHIP	10K 5% 1/10W
Q202	8-729-101-07	TRANSISTOR 2SB798-DL		R302	1-216-833-11	METAL CHIP	10K 5% 1/10W
Q203	8-729-403-35	TRANSISTOR UN5113		R303	1-216-833-11	METAL CHIP	10K 5% 1/10W
Q701	8-729-402-93	TRANSISTOR UN5214		R405	1-216-864-11	METAL CHIP	0 5% 1/10W
Q702	8-729-903-10	TRANSISTOR FMW1		R501	1-220-942-11	METAL CHIP	3.3 1% 1/4W
Q703	8-729-402-93	TRANSISTOR UN5214		R502	1-220-942-11	METAL CHIP	3.3 1% 1/4W
Q704	8-729-026-53	TRANSISTOR 2SA1576A-T106-QR		R551	1-216-841-11	METAL CHIP	47K 5% 1/10W
< RESISTOR >				R552	1-216-841-11	METAL CHIP	47K 5% 1/10W
R101	1-216-298-00	METAL CHIP	2.2 5% 1/10W	R553	1-216-841-11	METAL CHIP	47K 5% 1/10W
R102	1-219-724-11	METAL CHIP	1 1% 1/4W	R701	1-216-821-11	METAL CHIP	1K 5% 1/10W
R103	1-216-829-11	METAL CHIP	4.7K 5% 1/10W	R702	1-216-821-11	METAL CHIP	1K 5% 1/10W
				R703	1-216-821-11	METAL CHIP	1K 5% 1/10W
				R704	1-216-841-11	METAL CHIP	47K 5% 1/10W
				R705	1-216-833-11	METAL CHIP	10K 5% 1/10W
				R706	1-218-855-11	METAL CHIP	2.2K 0.5% 1/10W
				R707	1-218-863-11	METAL CHIP	4.7K 0.5% 1/10W

BD

DISPLAY

HP

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R708	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W	Q782	8-729-620-05	TRANSISTOR	2SC2603-EF		
R709	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W						
R710	1-218-887-11	METAL CHIP	47K	0.5%	1/10W			< RESISTOR >			
R711	1-216-833-11	METAL CHIP	10K	5%	1/10W	R759	1-249-401-11	CARBON	47	5%	1/4W
R712	1-216-809-11	METAL CHIP	100	5%	1/10W	R772	1-247-843-11	CARBON	3.3K	5%	1/4W
R713	1-216-833-11	METAL CHIP	10K	5%	1/10W	R773	1-247-807-31	CARBON	100	5%	1/4W
R802	1-216-864-11	METAL CHIP	0	5%	1/10W	R774	1-247-807-31	CARBON	100	5%	1/4W
R803	1-216-864-11	METAL CHIP	0	5%	1/10W	R775	1-247-807-31	CARBON	100	5%	1/4W
R805	1-216-809-11	METAL CHIP	100	5%	1/10W	R776	1-247-807-31	CARBON	100	5%	1/4W
R814	1-216-864-11	METAL CHIP	0	5%	1/10W	R781	1-247-807-31	CARBON	100	5%	1/4W
R815	1-216-864-11	METAL CHIP	0	5%	1/10W	R782	1-249-441-11	CARBON	100K	5%	1/4W
		< SWITCH >				R783	1-247-807-31	CARBON	100	5%	1/4W
S101	1-762-596-21	SWITCH, PUSH (1 KEY) (LIMIT-IN)				R784	1-249-441-11	CARBON	100K	5%	1/4W
S103	1-771-956-21	SWITCH, PUSH (1 KEY) (OUT)				*****					
S104	1-771-955-21	SWITCH, PUSH (1 KEY) (PLAY)				A-4728-639-A	HP BOARD, COMPLETE				
S105	1-771-955-21	SWITCH, PUSH (1 KEY) (REC)					*****				
*****							< CAPACITOR >				
	A-4728-637-A	DISPLAY BOARD, COMPLETE				C809	1-126-933-11	ELECT	100uF	20%	16V
		*****				C810	1-126-933-11	ELECT	100uF	20%	16V
*	4-955-901-01	CUSHION (FL)				C811	1-162-294-31	CERAMIC	0.001uF	10%	50V
*	4-996-686-03	HOLDER (FL)				C812	1-162-294-31	CERAMIC	0.001uF	10%	50V
		< CAPACITOR >				C813	1-164-159-11	CERAMIC	0.1uF		50V
C708	1-162-294-31	CERAMIC	0.001uF	10%	50V	C814	1-164-159-11	CERAMIC	0.1uF		50V
C709	1-162-294-31	CERAMIC	0.001uF	10%	50V			< CONNECTOR >			
C710	1-164-159-11	CERAMIC	0.1uF		50V	CN801	1-691-769-11	PLUG (MICRO CONNECTOR) 7P			
C770	1-164-159-11	CERAMIC	0.1uF		50V			< IC >			
C771	1-164-159-11	CERAMIC	0.1uF		50V	IC802	8-759-634-50	IC M5218AL			
C772	1-162-215-31	CERAMIC	47PF	5%	50V			< JACK >			
C773	1-162-294-31	CERAMIC	0.001uF	10%	50V	J802	1-770-307-11	JACK (LARGE TYPE) (PHONES)			
C774	1-162-294-31	CERAMIC	0.001uF	10%	50V			< TRANSISTOR >			
C775	1-162-294-31	CERAMIC	0.001uF	10%	50V	Q801	8-729-231-55	TRANSISTOR	2SC2878-AB		
C776	1-162-294-31	CERAMIC	0.001uF	10%	50V	Q802	8-729-231-55	TRANSISTOR	2SC2878-AB		
C777	1-164-159-11	CERAMIC	0.1uF		50V			< RESISTOR >			
C778	1-164-159-11	CERAMIC	0.1uF		50V	R808	1-247-807-31	CARBON	100	5%	1/4W
C779	1-124-589-11	ELECT	47uF	20%	16V	R809	1-247-807-31	CARBON	100	5%	1/4W
C783	1-124-261-00	ELECT	10uF	20%	50V	R810	1-249-433-11	CARBON	22K	5%	1/4W
C784	1-124-261-00	ELECT	10uF	20%	50V	R811	1-249-429-11	CARBON	10K	5%	1/4W
		< CONNECTOR >				R812	1-249-441-11	CARBON	100K	5%	1/4W
* CN751	1-691-407-11	CONNECTOR, BOARD TO BOARD 10P				R813	1-249-441-11	CARBON	100K	5%	1/4W
CN753	1-778-318-11	CONNECTOR, BOARD TO BOARD 13P				R814	1-249-433-11	CARBON	22K	5%	1/4W
		< DIODE >				R815	1-249-429-11	CARBON	10K	5%	1/4W
D759	8-719-313-45	LED SEL6810A-TH10 (MD LP)				R816	1-249-433-11	CARBON	22K	5%	1/4W
		< FLUORESCENT INDICATOR >				R817	1-249-433-11	CARBON	22K	5%	1/4W
FL781	1-517-987-11	INDICATOR TUBE, FLUORESCENT				R819	1-249-429-11	CARBON	10K	5%	1/4W
		< IC >				R820	1-249-429-11	CARBON	10K	5%	1/4W
IC771	8-759-680-17	IC MSM9201-04GS-K						< VARIABLE RESISTOR >			
		< TRANSISTOR >				RV801	1-227-208-11	RES, VAR, CARBON 20KX2 (PHONE LEVEL)			
Q759	8-729-900-80	TRANSISTOR DTC114ES				*****					
Q781	8-729-620-05	TRANSISTOR 2SC2603-EF									



# MDS-JB980

KEY	MAIN
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Ref. No.	Part No.	Description	Remark		
	A-4728-641-A	KEY BOARD, COMPLETE *****			
		< CAPACITOR >			
C801	1-164-159-11	CERAMIC	0.1uF		50V
C804	1-164-159-11	CERAMIC	0.1uF		50V
		< CONNECTOR >			
* CN800	1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
J801	1-785-945-21	CONNECTOR, DIN 4P (KEYBOARD)			
*****					
	A-4728-636-A	MAIN BOARD, COMPLETE (AEP)			
	A-4730-485-A	MAIN BOARD, COMPLETE (UK) *****			
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3			
		< BATTERY >			
BT404	1-756-121-11	BATTERY, LITHIUM SECONDARY			
		< CAPACITOR >			
C12	1-162-294-31	CERAMIC	0.001uF	10%	50V
C16	1-164-159-11	CERAMIC	0.1uF		50V
C19	1-162-294-31	CERAMIC	0.001uF	10%	50V
C58	1-162-282-31	CERAMIC	100PF	10%	50V
C62	1-164-159-11	CERAMIC	0.1uF		50V
C85	1-162-294-31	CERAMIC	0.001uF	10%	50V
C86	1-162-294-31	CERAMIC	0.001uF	10%	50V
C87	1-162-306-11	CERAMIC	0.01uF	30%	16V
C88	1-162-306-11	CERAMIC	0.01uF	30%	16V
C89	1-162-294-31	CERAMIC	0.001uF	10%	50V
C100	1-126-964-11	ELECT	10uF	20%	50V
C101	1-136-356-11	MYLAR	470PF	5%	50V
C102	1-119-825-11	ELECT	22uF	20%	25V
C103	1-135-709-11	ELECT	100uF		16V
C104	1-119-825-11	ELECT	22uF	20%	25V
C111	1-137-505-11	MYLAR	220PF	5%	50V
C115	1-137-503-11	MYLAR	0.0001uF	5%	50V
C116	1-137-503-11	MYLAR	0.0001uF	5%	50V
C117	1-136-287-11	MYLAR	0.0047uF	5%	50V
C118	1-130-471-00	MYLAR	0.001uF	5%	50V
C119	1-126-049-11	ELECT	22uF	20%	50V
C120	1-136-356-11	MYLAR	470PF	5%	50V
C126	1-135-709-11	ELECT	100uF		16V
C141	1-164-159-11	CERAMIC	0.1uF		50V
C142	1-164-159-11	CERAMIC	0.1uF		50V
C143	1-119-792-21	ELECT	470uF	20%	10V
					(AEP)
C143	1-126-026-81	ELECT	470uF	20%	25V
					(UK)
C201	1-136-356-11	MYLAR	470PF	5%	50V
C202	1-119-825-11	ELECT	22uF	20%	25V
C203	1-135-709-11	ELECT	100uF		16V
C204	1-119-825-11	ELECT	22uF	20%	25V
C211	1-137-505-11	MYLAR	220PF	5%	50V
C215	1-137-503-11	MYLAR	0.0001uF	5%	50V
C216	1-137-503-11	MYLAR	0.0001uF	5%	50V
C217	1-136-287-11	MYLAR	0.0047uF	5%	50V

Ref. No.	Part No.	Description	Remark		
C218	1-130-471-00	MYLAR 0.001uF 5%	50V		
C219	1-126-049-11	ELECT 22uF 20%	50V		
C220	1-136-356-11	MYLAR 470PF 5%	50V		
C226	1-135-709-11	ELECT 100uF	16V		
C241	1-164-159-11	CERAMIC 0.1uF	50V		
C242	1-164-159-11	CERAMIC 0.1uF	50V		
C243	1-119-792-21	ELECT 470uF 20%	10V		
			(AEP)		
C243	1-126-026-81	ELECT 470uF 20%	25V		
			(UK)		
C401	1-126-939-11	ELECT 10000uF 20%	16V		
C402	1-164-159-11	CERAMIC 0.1uF	50V		
C403	1-126-933-11	ELECT 100uF 20%	16V		
C406	1-162-306-11	CERAMIC 0.01uF 30%	16V		
C407	1-124-252-00	ELECT 0.33uF 20%	50V		
C411	1-126-768-11	ELECT 2200uF 20%	16V		
C421	1-126-939-11	ELECT 10000uF 20%	16V		
C422	1-164-159-11	CERAMIC 0.1uF	50V		
C424	1-126-916-11	ELECT 1000uF 20%	6.3V		
C431	1-126-962-11	ELECT 3.3uF 20%	50V		
C432	1-126-963-11	ELECT 4.7uF 20%	50V		
C440	1-164-159-11	CERAMIC 0.1uF	50V		
C441	1-119-814-21	ELECT 1000uF 20%	35V		
C443	1-119-814-21	ELECT 1000uF 20%	35V		
C451	1-128-576-11	ELECT 100uF 20%	63V		
C452	1-164-159-11	CERAMIC 0.1uF	50V		
C453	1-126-967-11	ELECT 47uF 20%	50V		
C461	1-126-933-11	ELECT 100uF 20%	16V		
C462	1-162-306-11	CERAMIC 0.01uF 30%	16V		
C471	1-126-916-11	ELECT 1000uF 20%	6.3V		
C472	1-164-159-11	CERAMIC 0.1uF	50V		
C473	1-164-159-11	CERAMIC 0.1uF	50V		
C481	1-126-965-11	ELECT 22uF 20%	50V		
C500	1-126-934-11	ELECT 220uF 20%	10V		
C501	1-164-159-11	CERAMIC 0.1uF	50V		
C502	1-130-475-00	MYLAR 0.0022uF 5%	50V		
C503	1-130-475-00	MYLAR 0.0022uF 5%	50V		
C504	1-126-023-11	ELECT 100uF 20%	25V		
C505	1-164-159-11	CERAMIC 0.1uF	50V		
C508	1-128-801-11	CERAMIC 22PF 5%	50V		
C509	1-128-801-11	CERAMIC 22PF 5%	50V		
C515	1-162-282-31	CERAMIC 100PF 10%	50V		
C516	1-162-282-31	CERAMIC 100PF 10%	50V		
C517	1-162-282-31	CERAMIC 100PF 10%	50V		
C519	1-162-294-31	CERAMIC 0.001uF 10%	50V		
C520	1-126-933-11	ELECT 100uF 20%	16V		
C522	1-164-159-11	CERAMIC 0.1uF	50V		
C523	1-126-933-11	ELECT 100uF 20%	16V		
C524	1-164-159-11	CERAMIC 0.1uF	50V		
C541	1-164-159-11	CERAMIC 0.1uF	50V		
C601	1-164-159-11	CERAMIC 0.1uF	50V		
C611	1-164-159-11	CERAMIC 0.1uF	50V		
C612	1-126-963-11	ELECT 4.7uF 20%	50V		
C613	1-162-306-11	CERAMIC 0.01uF 30%	16V		
C631	1-164-159-11	CERAMIC 0.1uF	50V		
C632	1-126-963-11	ELECT 4.7uF 20%	50V		
C641	1-164-159-11	CERAMIC 0.1uF	50V		
C651	1-164-159-11	CERAMIC 0.1uF	50V		



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C652	1-162-306-11	CERAMIC 0.01uF 30% 16V		IC500	8-759-579-68	IC AK4524	
C681	1-164-159-11	CERAMIC 0.1uF 50V		IC611	6-600-014-01	IC TORX141L (DIGITAL OPTICAL IN)	
< CONNECTOR >				IC631	6-600-012-01	IC TOTX141L (DIGITAL OPTICAL OUT)	
CN1	1-784-417-11	CONNECTOR, FFC (LIF(NON-ZIF)) 23P		IC641	8-759-917-18	IC SN74HCU04AN	
CN2	1-779-295-11	CONNECTOR, FFC (LIF(NON-ZIF)) 27P		IC651	8-759-916-12	IC SN74HC00AN	
CN3	1-794-483-11	CONNECTOR, FFC (LIF(NON-ZIF)) 19P		< JACK >			
CN4	1-794-483-11	CONNECTOR, FFC (LIF(NON-ZIF)) 19P		J101	1-784-430-11	JACK, PIN 4P (ANALOG IN/OUT)	
CN102	1-784-923-11	PIN, CONNECTOR 7P		J601	1-784-432-11	JACK, PIN 1P (DIGITAL COAXIAL IN)	
CN401	1-784-928-11	PIN, CONNECTOR 13P		< COIL >			
CN404	1-568-683-11	PIN, CONNECTOR (PC BOARD) 2P		L611	1-410-509-11	INDUCTOR 10uH	
* CN801	1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P		L631	1-410-509-11	INDUCTOR 10uH	
< DIODE >				< TRANSISTOR >			
D101	8-719-911-19	DIODE 1SS119-25		Q121	8-729-044-08	TRANSISTOR 2SD1915(F)-T(TA).SO	
D102	8-719-911-19	DIODE 1SS119-25		Q151	8-729-422-57	TRANSISTOR UN4111	
D151	8-719-911-19	DIODE 1SS119-25		Q221	8-729-044-08	TRANSISTOR 2SD1915(F)-T(TA).SO	
D152	8-719-911-19	DIODE 1SS119-25		Q411	8-729-142-46	TRANSISTOR 2SC2001-LK	
D201	8-719-911-19	DIODE 1SS119-25		Q461	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D202	8-719-911-19	DIODE 1SS119-25		Q462	8-729-900-80	TRANSISTOR DTC114ES	
D401	8-719-210-21	DIODE 11EQS04		Q471	8-729-194-57	TRANSISTOR 2SC945-P	
D402	8-719-210-21	DIODE 11EQS04		Q801	8-729-900-80	TRANSISTOR DTC114ES	
D404	8-719-911-19	DIODE 1SS119-25		Q802	8-729-620-05	TRANSISTOR 2SC2603-EF	
D405	8-719-210-21	DIODE 11EQS04		Q803	8-729-900-80	TRANSISTOR DTC114ES	
D406	8-719-210-21	DIODE 11EQS04		Q804	8-729-620-05	TRANSISTOR 2SC2603-EF	
D411	8-719-024-99	DIODE 11ES2-NTA2B		Q805	8-729-900-80	TRANSISTOR DTC114ES	
D412	8-719-024-99	DIODE 11ES2-NTA2B		Q911	8-729-922-37	TRANSISTOR 2SD2144S-UVW	
D413	8-719-024-99	DIODE 11ES2-NTA2B		< RESISTOR >			
D414	8-719-024-99	DIODE 11ES2-NTA2B		R10	1-249-441-11	CARBON 100K 5% 1/4W	
D415	8-719-933-36	DIODE HZS6B1L		R29	1-249-441-11	CARBON 100K 5% 1/4W	
D421	8-719-024-99	DIODE 11ES2-NTA2B		R30	1-249-441-11	CARBON 100K 5% 1/4W	
D422	8-719-024-99	DIODE 11ES2-NTA2B		R41	1-249-441-11	CARBON 100K 5% 1/4W	
D431	8-719-911-19	DIODE 1SS119-25		R44	1-249-429-11	CARBON 10K 5% 1/4W	
D432	8-719-911-19	DIODE 1SS119-25		R46	1-249-429-11	CARBON 10K 5% 1/4W	
D433	8-719-911-19	DIODE 1SS119-25		R49	1-249-429-11	CARBON 10K 5% 1/4W	
D441	8-719-024-99	DIODE 11ES2-NTA2B		R51	1-249-429-11	CARBON 10K 5% 1/4W	
D442	8-719-024-99	DIODE 11ES2-NTA2B		R53	1-249-429-11	CARBON 10K 5% 1/4W	
D443	8-719-024-99	DIODE 11ES2-NTA2B		R55	1-249-429-11	CARBON 10K 5% 1/4W	
D444	8-719-024-99	DIODE 11ES2-NTA2B		R61	1-249-429-11	CARBON 10K 5% 1/4W	
D451	8-719-024-99	DIODE 11ES2-NTA2B		R85	1-249-429-11	CARBON 10K 5% 1/4W	
D452	8-719-109-81	DIODE RD4.7ES-B2		R86	1-249-429-11	CARBON 10K 5% 1/4W	
< TERMINAL BOARD >				R87	1-249-429-11	CARBON 10K 5% 1/4W	
EP440	1-537-771-21	TERMINAL BOARD, GROUND		R88	1-249-429-11	CARBON 10K 5% 1/4W	
< IC >				R90	1-249-441-11	CARBON 100K 5% 1/4W	
IC1	6-801-640-01	IC M30823MH-052FP		R91	1-249-441-11	CARBON 100K 5% 1/4W	
IC101	8-759-712-02	IC NJM2114D		R92	1-249-429-11	CARBON 10K 5% 1/4W	
IC111	8-759-712-02	IC NJM2114D		R93	1-249-429-11	CARBON 10K 5% 1/4W	
IC112	8-759-712-02	IC NJM2114D		R94	1-249-429-11	CARBON 10K 5% 1/4W	
IC141	8-759-708-06	IC NJM78L06A		R95	1-249-429-11	CARBON 10K 5% 1/4W	
IC241	8-759-700-69	IC NJM79L12A		R97	1-249-429-11	CARBON 10K 5% 1/4W	
IC401	8-759-445-59	IC BA033T		R100	1-249-441-11	CARBON 100K 5% 1/4W	
IC406	8-759-481-02	IC M62016L		R101	1-259-468-11	CARBON 47K 5% 1/6W	
IC421	8-759-231-53	IC TA7805S		R102	1-249-433-11	CARBON 22K 5% 1/4W	
IC451	8-759-633-42	IC M5293L		R103	1-247-887-00	CARBON 220K 5% 1/4W	
IC461	8-759-822-09	IC LB1641					

# MDS-JB980

MAIN

PSW

Ref. No.	Part No.	Description			Remark
R105	1-259-396-11	CARBON	47	5%	1/6W
R111	1-215-445-00	METAL	10K	1%	1/4W
R112	1-215-445-00	METAL	10K	1%	1/4W
R113	1-215-445-00	METAL	10K	1%	1/4W
R114	1-215-445-00	METAL	10K	1%	1/4W
R115	1-215-454-00	METAL	24K	1%	1/4W
R116	1-215-454-00	METAL	24K	1%	1/4W
R117	1-215-425-00	METAL	1.5K	1%	1/4W
R118	1-215-425-00	METAL	1.5K	1%	1/4W
R119	1-259-420-11	CARBON	470	5%	1/6W
R120	1-259-420-11	CARBON	470	5%	1/6W
R121	1-249-429-11	CARBON	10K	5%	1/4W
R122	1-249-441-11	CARBON	100K	5%	1/4W
R151	1-249-441-11	CARBON	100K	5%	1/4W
R152	1-247-883-00	CARBON	150K	5%	1/4W
R201	1-259-468-11	CARBON	47K	5%	1/6W
R202	1-249-433-11	CARBON	22K	5%	1/4W
R203	1-247-887-00	CARBON	220K	5%	1/4W
R205	1-259-396-11	CARBON	47	5%	1/6W
R211	1-215-445-00	METAL	10K	1%	1/4W
R212	1-215-445-00	METAL	10K	1%	1/4W
R213	1-215-445-00	METAL	10K	1%	1/4W
R214	1-215-445-00	METAL	10K	1%	1/4W
R215	1-215-454-00	METAL	24K	1%	1/4W
R216	1-215-454-00	METAL	24K	1%	1/4W
R217	1-215-425-00	METAL	1.5K	1%	1/4W
R218	1-215-425-00	METAL	1.5K	1%	1/4W
R219	1-259-420-11	CARBON	470	5%	1/6W
R220	1-259-420-11	CARBON	470	5%	1/6W
R221	1-249-429-11	CARBON	10K	5%	1/4W
R222	1-249-441-11	CARBON	100K	5%	1/4W
R404	1-249-413-11	CARBON	470	5%	1/4W
R406	1-249-429-11	CARBON	10K	5%	1/4W
R411	1-249-413-11	CARBON	470	5%	1/4W
R431	1-247-807-31	CARBON	100	5%	1/4W
R432	1-249-425-11	CARBON	4.7K	5%	1/4W
R433	1-247-843-11	CARBON	3.3K	5%	1/4W
R434	1-249-441-11	CARBON	100K	5%	1/4W
R451	1-249-433-11	CARBON	22K	5%	1/4W
R452	1-249-441-11	CARBON	100K	5%	1/4W
R453	1-249-409-11	CARBON	220	5%	1/4W
R454	1-249-409-11	CARBON	220	5%	1/4W
R461	1-249-433-11	CARBON	22K	5%	1/4W
R462	1-249-431-11	CARBON	15K	5%	1/4W
R463	1-249-433-11	CARBON	22K	5%	1/4W
R471	1-249-411-11	CARBON	330	5%	1/4W
R472	1-249-418-11	CARBON	1.2K	5%	1/4W
R511	1-247-807-31	CARBON	100	5%	1/4W
R512	1-247-807-31	CARBON	100	5%	1/4W
R513	1-247-807-31	CARBON	100	5%	1/4W
R514	1-247-807-31	CARBON	100	5%	1/4W
R601	1-247-804-11	CARBON	75	5%	1/4W
R602	1-249-417-11	CARBON	1K	5%	1/4W
R612	1-249-437-11	CARBON	47K	5%	1/4W
R614	1-247-807-31	CARBON	100	5%	1/4W
R622	1-249-437-11	CARBON	47K	5%	1/4W
R624	1-247-807-31	CARBON	100	5%	1/4W
R651	1-247-807-31	CARBON	100	5%	1/4W

Ref. No.	Part No.	Description			Remark
R681	1-249-439-11	CARBON	68K	5%	1/4W
R682	1-249-417-11	CARBON	1K	5%	1/4W
R683	1-247-895-00	CARBON	470K	5%	1/4W
R801	1-249-429-11	CARBON	10K	5%	1/4W
R802	1-249-429-11	CARBON	10K	5%	1/4W
R803	1-249-429-11	CARBON	10K	5%	1/4W
R804	1-249-429-11	CARBON	10K	5%	1/4W
R805	1-249-425-11	CARBON	4.7K	5%	1/4W
R806	1-249-425-11	CARBON	4.7K	5%	1/4W
R807	1-249-429-11	CARBON	10K	5%	1/4W
R808	1-249-429-11	CARBON	10K	5%	1/4W
R809	1-249-429-11	CARBON	10K	5%	1/4W
R810	1-249-429-11	CARBON	10K	5%	1/4W
R911	1-249-421-11	CARBON	2.2K	5%	1/4W
R912	1-249-437-11	CARBON	47K	5%	1/4W
< VIBRATOR >					
X15	1-795-004-21	VIBRATOR, CERAMIC (10MHz)			
X509	1-781-205-21	VIBRATOR, CRYSTAL (11.2896MHz)			
*****					
A-4728-638-A		PSW BOARD, COMPLETE			
*****					
< CAPACITOR >					
C752	1-164-159-11	CERAMIC	0.1uF		50V
C761	1-124-589-11	ELECT	47uF	20%	16V
C762	1-164-159-11	CERAMIC	0.1uF		50V
< CONNECTOR >					
* CLP700	1-690-880-31	LEAD (WITH CONNECTOR)			
* CN750	1-691-409-11	CONNECTOR, BOARD TO BOARD 10P			
< DIODE >					
D756	8-719-313-43	LED SEL6210S-TH10 (STANDBY)			
D757	8-719-038-54	LED SEL6414E-LC05 (FILTER)			
D758	8-719-032-98	LED SEL5820A (SF EDIT)			
< IC >					
IC761	8-749-013-91	IC GP1UC8X			
< TRANSISTOR >					
Q755	8-729-900-80	TRANSISTOR DTC114ES			
Q757	8-729-900-80	TRANSISTOR DTC114ES			
Q758	8-729-900-80	TRANSISTOR DTC114ES			
< RESISTOR >					
R722	1-249-417-11	CARBON	1K	5%	1/4W
R723	1-249-421-11	CARBON	2.2K	5%	1/4W
R724	1-249-421-11	CARBON	2.2K	5%	1/4W
R726	1-249-425-11	CARBON	4.7K	5%	1/4W
R732	1-249-417-11	CARBON	1K	5%	1/4W
R734	1-249-421-11	CARBON	2.2K	5%	1/4W
R752	1-249-429-11	CARBON	10K	5%	1/4W
R756	1-249-409-11	CARBON	220	5%	1/4W
R757	1-249-401-11	CARBON	47	5%	1/4W
R758	1-249-401-11	CARBON	47	5%	1/4W
R760	1-249-401-11	CARBON	47	5%	1/4W

PSW

PT

USB

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R762	1-247-807-31	CARBON 100 5%	1/4W	C223	1-164-156-11	CERAMIC CHIP 0.1uF	25V
		< SWITCH >		C226	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
S722	1-762-875-21	SWITCH, KEYBOARD (PLAY MODE)		C227	1-164-156-11	CERAMIC CHIP 0.1uF	25V
S723	1-762-875-21	SWITCH, KEYBOARD (REPEAT)		C228	1-164-156-11	CERAMIC CHIP 0.1uF	25V
S724	1-762-875-21	SWITCH, KEYBOARD (DISPLAY/CHAR)		C230	1-216-864-11	METAL CHIP 0	5% 1/10W
S725	1-762-875-21	SWITCH, KEYBOARD (STANDBY)		C235	1-164-156-11	CERAMIC CHIP 0.1uF	25V
S731	1-762-875-21	SWITCH, KEYBOARD (GROUP SKIP)		C236	1-164-156-11	CERAMIC CHIP 0.1uF	25V
				C241	1-164-156-11	CERAMIC CHIP 0.1uF	25V
S732	1-762-875-21	SWITCH, KEYBOARD (GROUP ON/OFF)		C242	1-164-156-11	CERAMIC CHIP 0.1uF	25V
S733	1-762-875-21	SWITCH, KEYBOARD (NET MD)				< CONNECTOR >	
S751	1-572-210-11	SWITCH, SLIDE (TIMER)		CN201	1-778-691-11	CONNECTOR, FFC/FPC 19P	
*****				CN203	1-815-194-11	CONNECTOR, USB (B) (USB)	
	1-684-129-12	PT BOARD				< DIODE >	
		*****		D201	8-719-988-61	DIODE 1SS355TE-17	
		< CAPACITOR >				< JUMPER RESISTOR >	
△ C911	1-113-920-11	CERAMIC 0.0022uF 20%	250V	FB201	1-216-864-11	METAL CHIP 0 5%	1/10W
C923	1-164-159-11	CERAMIC 0.1uF	50V	FB202	1-216-864-11	METAL CHIP 0 5%	1/10W
C924	1-164-159-11	CERAMIC 0.1uF	50V	FB203	1-216-864-11	METAL CHIP 0 5%	1/10W
C952	1-164-159-11	CERAMIC 0.1uF	50V	FB204	1-216-864-11	METAL CHIP 0 5%	1/10W
C953	1-164-159-11	CERAMIC 0.1uF	50V			< IC >	
C954	1-164-159-11	CERAMIC 0.1uF	50V	IC201	8-752-415-60	IC CXD1873R	
C955	1-164-159-11	CERAMIC 0.1uF	50V	IC202	8-759-058-57	IC TC7S04FU-TE85L	
		< CONNECTOR >				< JUMPER RESISTOR >	
* CN901	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P		L202	1-216-864-11	METAL CHIP 0 5%	1/10W
		< DIODE >		L203	1-216-864-11	METAL CHIP 0 5%	1/10W
D911	8-719-911-19	DIODE 1SS119-25				< RESISTOR >	
		< LINE FILTER >		R202	1-216-833-11	METAL CHIP 10K 5%	1/10W
△ LF901	1-419-625-11	COIL, LINE FILTER		R204	1-216-809-11	METAL CHIP 100 5%	1/10W
		< RELAY >		R205	1-216-864-11	METAL CHIP 0 5%	1/10W
△ RY911	1-755-407-11	RELAY (AC POWER)		R206	1-216-864-11	METAL CHIP 0 5%	1/10W
		< TRANSFORMER >		R207	1-216-864-11	METAL CHIP 0 5%	1/10W
△ TR951	1-437-779-11	TRANSFORMER, POWER		R209	1-216-833-11	METAL CHIP 10K 5%	1/10W
*****				R210	1-216-833-11	METAL CHIP 10K 5%	1/10W
	A-4728-568-A	USB BOARD, COMPLETE		R212	1-216-864-11	METAL CHIP 0 5%	1/10W
		*****		R213	1-216-864-11	METAL CHIP 0 5%	1/10W
		< CAPACITOR >		R214	1-216-864-11	METAL CHIP 0 5%	1/10W
C201	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R216	1-216-833-11	METAL CHIP 10K 5%	1/10W
C202	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R217	1-216-839-11	METAL CHIP 33K 5%	1/10W
C206	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R218	1-216-837-11	METAL CHIP 22K 5%	1/10W
C211	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R219	1-216-801-11	METAL CHIP 22 5%	1/10W
C212	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R220	1-216-801-11	METAL CHIP 22 5%	1/10W
C215	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R221	1-216-823-11	METAL CHIP 1.5K 5%	1/10W
C216	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R222	1-216-864-11	METAL CHIP 0 5%	1/10W
C217	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R223	1-216-864-11	METAL CHIP 0 5%	1/10W
C218	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R224	1-216-864-11	METAL CHIP 0 5%	1/10W
C219	1-162-919-11	CERAMIC CHIP 22PF 5%	50V	R241	1-216-821-11	METAL CHIP 1K 5%	1/10W
C220	1-162-919-11	CERAMIC CHIP 22PF 5%	50V	R242	1-216-841-11	METAL CHIP 47K 5%	1/10W
C221	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R243	1-216-864-11	METAL CHIP 0 5%	1/10W

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

MDS-JB980



Ref. No.	Part No.	Description	Remark			
< VIBRATOR >						
X201	1-567-865-11	VIBRATOR, CRYSTAL (12MHz)	*****			
A-4728-640-A SW BOARD, COMPLETE						
*****						
< CAPACITOR >						
C700	1-124-589-11	ELECT	47uF	20%	16V	
C765	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C766	1-162-294-31	CERAMIC	0.001uF	10%	50V	
< CONNECTOR >						
CN701	1-779-556-21	CONNECTOR, FFC (LIF(NON-ZIF)) 19P				
CN752	1-778-317-11	CONNECTOR, BOARD TO BOARD 13P				
< RESISTOR >						
R702	1-249-417-11	CARBON	1K	5%	1/4W	
R703	1-249-421-11	CARBON	2.2K	5%	1/4W	
R704	1-249-421-11	CARBON	2.2K	5%	1/4W	
R705	1-249-425-11	CARBON	4.7K	5%	1/4W	
R706	1-249-429-11	CARBON	10K	5%	1/4W	
R712	1-249-417-11	CARBON	1K	5%	1/4W	
R713	1-249-421-11	CARBON	2.2K	5%	1/4W	
R714	1-249-421-11	CARBON	2.2K	5%	1/4W	
R717	1-249-425-11	CARBON	4.7K	5%	1/4W	
R718	1-249-429-11	CARBON	10K	5%	1/4W	
< ROTARY ENCODER >						
RV760	1-418-363-11	ENCODER, ROTARY (REC LEVEL)				
< SWITCH >						
S701	1-762-875-21	SWITCH, KEYBOARD (REC)				
S702	1-762-875-21	SWITCH, KEYBOARD (■)				
S703	1-762-875-21	SWITCH, KEYBOARD (▶▶)				
S704	1-762-875-21	SWITCH, KEYBOARD (◀◀)				
S705	1-762-875-21	SWITCH, KEYBOARD (  )				
S706	1-762-875-21	SWITCH, KEYBOARD (▷)				
S711	1-762-875-21	SWITCH, KEYBOARD (MENU/NO)				
S712	1-762-875-21	SWITCH, KEYBOARD (YES)				
S713	1-475-543-11	ENCODER, ROTARY (AMS)				
S714	1-762-875-21	SWITCH, KEYBOARD (CLEAR)				
S716	1-762-875-21	SWITCH, KEYBOARD (INPUT)				
S717	1-762-875-21	SWITCH, KEYBOARD (REC MODE)				
S721	1-762-875-21	SWITCH, KEYBOARD (EJECT)				
*****						

Ref. No.	Part No.	Description	Remark
MISCELLANEOUS			
*****			
5	1-792-811-11	WIRE (FLAT TYPE) (23 CORE)	
6	1-757-928-11	WIRE (FLAT TYPE) (27 CORE)	
* 56	1-569-972-21	SOCKET, SHORT 2P	
57	1-824-049-11	WIRE (FLAT TYPE) (19 CORE)	
△ 59	1-558-568-21	CORD, POWER (AEP)	
△ 59	1-751-523-11	CORD, POWER (UK)	
122	1-792-926-11	WIRE (FLAT TYPE) (19 CORE)	
209	1-678-514-11	FLEXIBLE BOARD	
△ 212	A-4672-541-A	OPTICAL PICK-UP KMS-260	
HR901	1-500-670-22	HEAD, OVER WRITE	
M101	A-4735-757-A	MOTOR ASSY, SPINDLE (SPINDLE)	
M102	A-4735-076-A	MOTOR ASSY, SLED (SLED)	
M103	A-4735-074-A	MOTOR ASSY, LOADING (LOADING)	
S102	1-771-957-11	SWITCH, PUSH (2 KEY) (OPEN/CLOSE)	
△ TR901	1-437-339-11	TRANSFORMER, POWER	
*****			
ACCESSORIES			
*****			
1-476-723-11	COMMANDER, STANDARD (RM-D10E)		
1-574-264-11	CORD, OPTICAL PLUG		
1-757-471-11	CABLE, CONNECTION (USB)		
1-791-732-11	CORD, CONNECTION		
4-237-880-12	CD-ROM		
4-237-882-11	MANUAL, INSTRUCTION (ENGLISH) (AEP)		
4-237-882-21	MANUAL, INSTRUCTION (CZECH,HUNGARIAN)		(AEP)
4-237-882-31	MANUAL, INSTRUCTION (TURKISH) (AEP)		(AEP)
4-237-882-41	MANUAL, INSTRUCTION (SLOVAKIAN) (AEP)		(AEP)
4-239-217-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH)		(AEP)
4-239-217-21	MANUAL, INSTRUCTION (SPANISH,POLISH)		(AEP)
4-239-217-31	MANUAL, INSTRUCTION (GERMAN,DUTCH, SWEDISH,ITALIAN) (AEP)		(AEP)
4-239-217-41	MANUAL, INSTRUCTION (DANISH,FINNISH)		(AEP)
4-241-445-11	MANUAL, INSTRUCTION (ENGLISH) (AEP)		(AEP)
4-241-445-21	MANUAL, INSTRUCTION (HUNGARIAN,CZECH)		(AEP)
4-241-445-31	MANUAL, INSTRUCTION (TURKISH) (AEP)		(AEP)
4-241-445-41	MANUAL, INSTRUCTION (SLOVAKIAN) (AEP)		(AEP)
4-981-643-11	COVER, BATTERY (for RM-D10E)		

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

**MEMO**

## REVISION HISTORY

Clicking the version allows you to jump to the revised page.

Also, clicking the version at the upper on the revised page allows you to jump to the next revised page.

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